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ORIGINAL ARTICLES.

INJURIES TO THE PERINEUS LONGUS TENDON AND ITS SHEATH.

By D. Hayes Agnew, M.D., LL.D.,
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Several times during the last few months patients have consulted me in regard to persistent lameness which had been diagnosed and treated as ankle sprain, the disability having followed a severe twist or injury to that joint.

The usual treatment—rest and anodyne lotions—were prescribed, and after a reasonable period the patients were advised to commence walking. In a short time the lameness came back and continued until rest was again enforced. On renewal of exercise, the same suffering again appeared. One of these patients was a young lady who had been under treatment for a year without obtaining relief.

In each instance no trouble was discovered in the ankle joint, but in all the disease was located in the sheath of the tendon of the perineus longus muscle. This tendon, passing behind the external malleolus, enters a strong fibrous sheath, which conducts it along the side of the os calcis to a groove in the cuboid bone immediately behind the tuberosity of the fifth metatarsal bone, from whence it crosses the sole of the foot, covered in by the long calcaneo cuboid ligament, and is inserted into the base of the metatarsal bone of the great toe. In forcible abduction or twisting inwards of the foot, this tendon is overstretched, the synovial membrane is injured, and lameness follows, the result of inflammation.

The recognition of the injury is easily made out, tenderness being experienced by pressure made along the course of the tendon between the external

malleolus and the base of the metatarsal bone of the little toe. Pain on forcible adduction of the foot will also be present, but little, if any, swelling. A differential diagnosis between this injury and sprain of the ankle is not a matter of difficulty. In sprain of the ankle, swelling is diffused about the joint, generally on the front of the articulation, while the swelling in injury of the tendon, if at all present, is located along the outer side of the foot between the external malleolus and the base of the metatarsal bone of the little toe. In injury of the tendon little inconvenience is experienced in flexion and extension of the foot, while such movements in cases of ankle sprain are attended by severe pain.

The treatment proper to the accident involving this tendon and its synovial investment, consists in fixation of the ankle with a Dupuytren splint applied along the outer part of the limb, by means of which the foot is secured in a state of abduction. This position relaxes the tendon and removes pressure from its canal.

Cold lotions, such as lead water and laudanum, may be applied for a short time. After eight or ten days the inflammatory trouble will have subsided, and the patient may be permitted to go about, but now comes the important part of the treatment. If allowed to walk with an ordinary shoe the trouble will certainly recur, as this tendon, being one of the supports of the foot, is not in a condition to endure its ordinary functional pressure. The sole of the shoe must be raised on the outside by a number of plies of leather, gradually thinned off toward the inner part so as to throw the weight of the body strongly on the inside of the foot, and thus relieve the tendon of all tension. In old cases of the injury a shoe so constructed must be worn for several months, and even then only restored to the usual form by gradually removing one ply of leather after another from the sole.

THE ACTIONS OF DRUGS WHICH ARE BELIEVED TO CONSERVE THE TISSUES: ALCOHOL, TEA, COFFEE, COCA, MATÉ, KOLA, GUARANA, HEMP, TOBACCO, OPIUM, ETC.

By Edward T. Reichert, M.D.,
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The use by mankind of alcohol in some form, and of various plant products which have as the basis of their activity caffeine, cocaine, or some allied alkaloid or principle, is so universal as to lead to the belief that the craving for them is almost, if not entirely, instinctive. Certain of them have been used from time immemorial, and their consumption has so extended with succeeding centuries that at the present day it may be said that there is scarcely a race in exist-

ence that does not indulge habitually in their use. While the earliest historical records suggest that preparations of alcohol were used before what may be termed the members of the alkaloid group, it is reasonable to suppose that primitive man, subsisting as he did largely upon vegetable matter, must have been cognizant of the virtues of some of these plants or of others of a similar economic nature.

The use of alcoholic drinks dates beyond the beginning of the Christian era. Scripture shows that wine was more or less extensively used, and it is very clear that the art of brewing was practised by Egyptians, Greeks, Romans and others many centuries before this period. Corn, barley, and other cereals were employed. Pliny states that

"the natives who inhabit the West of Europe have a liquor made from corn and water, with which they intoxicate themselves. The manner of making the liquor is sometimes different in Gaul, Spain, and other countries, and is called by many names; but its nature and properties are everywhere the same. The people of Spain, in particular, brew the liquor so well that it keeps for a long time. So exquisite is the cunning of mankind in gratifying their vicious appetites that they have thus invented a method to make water itself intoxicate."

From barley a beer or wine was prepared which the Spaniard called *cælia* or *ceria;* the Gaul, *cerevisia;* and the Briton, *curmi.* The South American brews a beer from corn which he terms *cachica,* and the West African his *pitto* or *peto.* The Russian makes from barley or rye, *koasso* or *quaso.* Abyssinians, Nubians, and other Africans brew from durrha or millet seed, from the flower of the teff, or from the seeds of certain grasses. The fermented juice of the American aloe furnishes the *pulque* of the Mexican, and rice the *san-shee* of the Chinese. Certain races of South America employ millet seed, while sugar cane is esteemed by certain of the nations of South America, Mexico, the West India Islands, and elsewhere. Thus we find people everywhere for ages past using various substances—seeds, cereals, tubers, succulent plants, fruits, etc.—rich in starchy or saccharine matter, which they cause to ferment, and thus derive their various beverages, the active basis of all being alcohol in various proportions.

In the second group, already referred to as the alkaloid group, are included various plant products which are chewed in the raw state or when mixed with other substances, or smoked or used in the form of an infusion or decoction, the chief among them being tea, coffee, coca, maté, kola bean, guarana, tobacco, opium and hemp. According to tradition, the use of tea dates to the time of the mythical Emperor Chinung, 2737 B. C. Whether this may be true in fact or not there is no doubt but that the virtues of tea were known to writers of certain poems which appeared over five centuries before the Christian era, while the writings of Lo Yu, who lived during the Tang Dynasty (618–906 A. D.), render it quite certain that it was in general use during, and even before, the sixth century. The employment of coffee is undoubted for over a thousand years, and it is almost beyond question that the Abyssinians and other people used it many centuries antecedent to this. Coca was used by the Mexicans and South American Indians long before the discovery of America by Columbus, while the consumption of hemp in various forms dates many centuries back. Kola nuts are chewed by the Africans, as do the Brazilians coca leaves, and so highly are

they prized that they are at times used as money, and even as a fetich. Guarana has for many centuries been employed by the Brazilians, and the use of maté or Paraguay tea by the Paraguay Indians has existed from time immemorial, and during the last two centuries has extended to all classes in Paraguay, Brazil, the Argentine Republic, and other countries of South America. The virtues of opium were known for over three centuries B. C., and of hemp for over five centuries B. C.

The increasing consumption of this class of substances for ages past, especially with advancing civilization, their almost universal use by all races of mankind, and their potent actions on the organism, certainly warrant the conclusion that they supply some important service to the economy. While certain of them are used as beverages, or chewed because of pleasant gustatory properties, there are others which are so offensive that it is evident that their virtues are entirely apart from this. They, as a class, possess peculiar physiological actions in common, causing, in moderate amounts, exhilaration of the cerebral functions, physical excitement, a suspension of the sense of hunger and thirst and of fatigue, and an increase of the power of endurance and of the ability for work. Apart from the preparations of alcohol, it is evident that none of them, in the quantities ingested, contain any notable quantity of nutritive matter, so that their efficiency in sustaining the system cannot be due to their value as foods, yet experience unequivocally demonstrates that they not only can replace food, but in cases of restrictive diet, or even in the entire absence of food, will enable the individual to perform as much, or even more, work than under ordinary circumstances, and even permit, in some instances, of the entire loss of sleep for consecutive days without injury or fatigue. The fact that these substances can apparently serve as foods, coupled with the knowledge that with the exception of the alcoholic preparations they can furnish but a trifling amount of energy, has led to the assumption that they in some way preserve the tissues from the active destruction which normally occurs under conditions of increased activity, hence they have been classed as the *conservers* of the tissues, by the French as *les aliments d' épargne*, and the German as *sparmittel*. It is remarkable that while it is universally conceded that the yield of energy in organisms is at the direct expense of the tissues, and that functional activity goes hand in hand with the amount of energy formed, that these drugs should be thought to diminish in extent the very changes which are essential to all forms of vital activity. While the belief that tissue destruction is diminished has not been demonstrated by scientific methods, there can be no doubt but that general observations conclusively show that their use enormously increases the power of endurance and the ability for work, and will enable a man to go entirely without food and sleep for consecutive days without injury, or even discomfort. The testimony of nearly all investigators is significantly uniform, and is of such general interest that a brief sketch of some of the statements may be given.

Leaving for a moment the alcoholic preparations, we will find sufficient in connection with the members of the alkaloid group to demonstrate their virtues. Perhaps none of the substances have been so lauded, and doubtless none are so potent, as coca leaves. The travellers Tschudi and Unanne, many years ago

wrote that coca could replace food, and that the natives of South America would exhibit remarkable feats of strength and endurance through its use. The former gives an instance of an Indian, 62 years of age, who underwent heavy continuous work for five consecutive days and nights, taking but two hours sleep a day, and subsisting practically on coca leaves. Another traveller, Weddell, states that an Indian chewing coca will go on foot for hours without food and without apparent fatigue, and Poeppig writes

"that the miners chewing it every three hours, with a handful of maize, will do such work in the mines for twelve hours as no European could effect, and that an Indian runner will carry a load of a hundred weight for ten leagues, over rough roads, in eight hours, by its aid alone."

Stevenson found

"that the natives in the mines, or when travelling, derive such sustenance from chewing the leaves that they frequently took no food for four or five days, though constantly working; and that they told him that with a good supply of coca they felt neither hunger, thirst nor fatigue, and that, without inconvenience or injury, they could remain eight or ten days without sleep."

The personal experience of Markham, who frequently chewed coca, was that it caused an agreeable, soothing feeling, and that he could endure long abstention from food with less inconvenience than otherwise, and that it enabled him to ascend precipitous mountain sides with a feeling of lightness and elasticity, and without losing breath. Christison from experiments on himself and several students, concludes that

"The chewing of coca removes external fatigue and prevents it. Hunger and thirst are suspended, but eventually appetite and digestion are unaffected. No injury is sustained at the time, or subsequently in occasional trials, but I can say nothing of what may or may not happen if it be used habitually. From sixty to ninety grains are sufficient for one trial, but some persons require either more or are constitutionally proof against its restorative action. It has no effect on the mental faculties, as far as my observations go, except in liberating the dulness and drowsiness which follow great bodily fatigue. It reduces the effect of severe protracted exercise in accelerating the pulse."

A recent trial of the drug, made by Dr. Palmer,[1] affords a capital illustration of its power to dispel fatigue and to enable the accomplishment of considerable work under conditions of great physical exhaustion. In a seven-day go-as-you-please walking match were six professional female pedestrians. On the sixth day of the contest all but three were off the track, and a fourth, the subject of the experiment, had just made her appearance, but in bad form, and had practically given up. Her gait was unsteady, her eyes sunken and encircled with broad, dark rings. She walked slowly, and with evident pain and weariness. The registration showed her to be sixty-eight miles behind her next competitor. Dr. Palmer prevailed on the trainer to permit him to take part in the control of her during the remainder of the race, believing that he could put her on her feet with coca, which was accepted. She was given a large sherry-glassful of wine of coca at once. In twenty minutes a second dose was administered. In thirty minutes after the first dose her step was quicker and more elastic, and she declared that she felt like a new woman. In ten hours

[1] American Practitioner, 1885, p. 69.

from the new start she had gained twenty-one miles over her next competitor, reducing the gap to forty-seven miles. Up to this time one pint of the wine had been used. It was a noticeable fact that she was now the freshest of the walkers. The wine was now given freely. During the latter part of the race she met with an unfortunate accident. In order to avoid a male pedestrian, who was temporarily on the track, she attempted to step backward, and, in doing so, fell a distance of nearly six feet to the ground, and was carried to the dressing-room unconscious. She rallied, drank coca, and, although complaining of pain in the epigastric region and in the right knee, was soon on the track again, and, by dint of the free use of coca and the encouragement of the audience, finished the race at seven and a half minutes after one o'clock, thirty-six hours after the first administration of coca, and with fourteen and a half minutes to spare, and with a painful side and swollen knee adding increased burden to the task during the most critical period. She accomplished, since beginning the coca, over 102 miles, although, when she began taking it, she was completely broken down and was practically out of the race. From the time she began with the coca nothing else was taken but a sip of sherry and milk at intervals, and very little food. The use of coca was continued for two days after the race, and on the third day was withdrawn, when there occurred a slight increase in the pulse rate, which shortly disappeared.

The observations of Montegazza, Moréno y Maiz, and, in fact, of nearly all investigators, are in accord that coca possesses extraordinary power in increasing endurance and the ability for work, even in the absence of food.

While the claims for other members of this group are not as remarkable, they are essentially of the same character and abundantly corroborated. The alkaloid cocaine imparts to coca leaves their extraordinary potency, but caffeine, or theine, constitutes the active constituent of tea, coffee, maté, kola bean and guarana. Lo Yu, who has already been quoted, in writing of tea, says: "It tempers the spirits and harmonizes the mind, dispels lassitude, relieves fatigue, awakens thought, prevents drowsiness, lightens and refreshes the body, and clears the mental faculties." Dr. Isaac Hays, who was ship's surgeon on a polar expedition, wrote, as a result of personal observation, that so valuable are both tea and coffee that he was at a loss to say which was the better—

"The English Arctic explorers almost invariably used tea, and so did the Russians; but Dr. Kane's party, after repeated trials, took most kindly to coffee in the morning and tea in the evening. The coffee seemed to last through the day and the men seemed to grow hungry less rapidly, while tea soothed them after a hard day's labor and enabled them to sleep better. They both acted upon fatigued and overtasked men like a charm, and their superiority over alcoholic stimulants was very marked."

In a recent article on caffeine I have alluded to the peculiar virtues of coffee when great demand is made upon the system, or in the absence of a proper amount of food. Thus:

"The Orientals regard it as a specific against the debilitating influence of intense heat, and Larrey observed that during long marches the soldiers' spirits were quite as well raised by coffee as by brandy, and the effects less fugacious. We are told that caravans crossing the desert are at times supplied with coffee to the diminution, or even exclusion, of regular food.

The Central Africans, in their predatory excursions, are believed to depend largely, or even to subsist, upon a mixture of coffee and butter, which is made up in the form of a mass about the size of an egg, one of which is deemed sufficient to sustain a man's strength for a day. Soldiers supplied with coffee were enabled to endure long marches, continued privations, and excessive heat with ease; and Jomand states that about three-fourths of an ounce of coffee and about seven pints of water enabled him to live for five consecutive days, during which he not only performed his regular work, but was even able to do more without other injury than slight fatigue and loss of weight."

A late writer, after a study of the effects of tea, concludes that its value to the poor can scarcely be overrated. To them he thinks tea is virtually a tissue, and makes a supply of food which would otherwise prove inadequate to maintain the weight of the body, sufficient for that purpose. Maté, or Paraguay tea, has been similarly praised. It is said that the *gauchos* will travel for weeks with no food other than dried beef and maté, and that its power of dispelling fatigue and increasing the strength is remarkable. The observations of various travellers in the use of guarana show that its most potent actions are those peculiar to caffeine, and that kola nuts are to the Africans between the Sierra Leone and Congo what coca leaves are to the South American.

Were it necessary, the testimony here given could be enormously amplified, and the experience with such powerful drugs as alcohol, tobacco, hemp, opium and minor substances similarly collected, but, after all, the result would be but a modified duplication of the above, and would but exhibit the concurrence of nearly all investigation in proving the remarkable virtues of these substances under circumstances of restricted diet, or when great demands are made upon the system in the way of mental and physical endurance. Admitting, then, the existence of such properties, it becomes of great economic importance to learn in what manner the phenomena are brought about.

Among the earliest and most prominent effects of these agents is a marked condition of mental exhilaration. This alone affords an almost complete and satisfactory explanation of certain associated phenomena which seem to be of a mere physical character, for experience abundantly teaches that in abnormal states of the mind, as in cases of insanity, delirium, hysteria, etc., there are exhibited at times the very group of phenomena which is so characteristic of these substances: mental exhilaration, physical excitement, the loss or benumbing of the sense of hunger and of thirst and of fatigue, and the manifestation of remarkable powers of strength and endurance. But while it is true that these effects may primarily be due to a direct cerebral action, it is equally evident that a condition of increased excitability and activity of the energy-yielding processes, while primarily and chiefly causing physical activity, would indirectly similarly affect the mental condition. It is apparent, however, that the action upon the brain is, in part at least, direct, since the mental symptoms precede the physical, and are, if anything, more pronounced. While it is thus manifest that the state of cerebral exaltation might alone be held as a sufficient explanation of the method of action, there are potent reasons for believing that there are, at times at least, other important factors.

Increased activity inevitably involves increased tissue waste, yet the belief is that these agents, even in the absence of food, actually preserve the tissues.

Experimental observations have frequently been made by chemists, with the more important of these substances, to determine definitely how tissue metamorphosis is effected, but the results are so conflicting as to rob them of any real value. Faulty methods are, to some extent, accountable for this, but it is also clear that such studies possess no significance, because the reasoning upon which they are based has been shown, by recent advances in physiology, to be untenable. Thus it has been assumed that the quantities of CO_2 and of urea eliminated constituted indices of the activity of tissue destruction; but while it is certain that these bodies do arise in such changes, it is also true that the amounts formed are largely influenced by other circumstances, and that the yield of energy may be enormously increased without immediate evidence of it in their elimination. They represent final products of the oxidation of complex molecules, which, doubtless, undergo many transitional stages before reaching these forms, so that there may be a considerable yield of energy before the CO_2 and urea stages are reached. At the present day the only reliable method we possess in determining the degree of tissue destruction is in the measure of the amount of energy evolved in the form of work and heat, both of which are capable of accurate study. Whether the tissues are preserved or not becomes then a simple matter for the experimental physiologist.

That the accomplishment of work depends upon the evolution of energy, and that the latter is the result of tissue destruction, does not admit of argument. It therefore follows that these agents must either furnish energy in themselves or that the condition of physical activity is directly at the expense of the tissues. While it is unqestionable that the members of the alkaloid group (tea, coffee, etc.), do not yield any appreciable amount of energy through their disintegration, it is equally evident that the alcoholic preparations, in the quantities ordinarily taken, are rich in potential energy, and in a form readily available to the organism. Each gramme of alcohol when completely oxidized yields about nine kilogramme degrees, and as an average individual of average weight will dissipate in twenty-four hours an amount of energy equivalent to 2700 kilogramme degrees, it would require but 300 grammes of alcohol to furnish the entire quantity of energy required by the organism per diem under ordinary conditions. That alcohol is thus destroyed within the body receives support in well-known facts—in its power of sustaining the system in disease when food is withheld; in the increase in weight in certain individuals when on a diet less than the normal demand; in the ability of the organism to maintain an equilibrium of metabolism when the carbohydrate and hydrocarbon class of foods is restricted and the nitrogenous portions normal; in its rapid disappearance in the system, and in the very small percentage recoverable in the excretions even after large doses; and, also, by certain recent experimental studies. The last are of such importance that they may briefly be alluded to. Thompson[1]

"sought to ascertain by a series of experiments, arranged strictly in accordance with the method of difference, whether, of measured doses of alcohol, the amount eliminated is or is not influenced by the amount of other food taken. For instance, supposing alcohol to be a food, then, other things being equal, we should anticipate that the amount eliminated when the

[1] Lancet, 1885, I, p. 743.

demand of the body for nourishment has already been amply supplied from other sources would be greater than when the reverse was the case, as in starvation. This difference could be observable equally by all the channels of elimination ; it would, therefore, be sufficiently conclusive of the connection of cause and effect if the elimination by any one channel was completely studied under these conditions. The difficult and uncertain channels might be neglected and the more workable one (the urinary) adopted for observation."

The experiments were conducted on himself and a friend. The plan was as follows :

"Two experiments were made on the same individual. In experiment one, a demand for nourishment was to be created by exercise and starvation ; in experiment two, the demand for nourishment was to be reduced to a minimum by rest and feeding. All the other circumstances were to be, as far as possible, identical in the two observations. On each occasion the same quantity of alcohol was to be taken, in the same doses and at the same hours. The relative amount of alcohol eliminated by the kidneys in the two cases was then to be compared. In anticipation of the possibility that in the first observation the skin elimination would be favored by exercise, . . . the first dose of alcohol was not taken until an hour after the exercise was completed, and then every precaution was taken to reduce the skin elimination to a minimum."

The results were uniform, and show that

"while the subjects were creating a demand for nourishment by exercise and starvation, there was no ascertainable elimination of alcohol by the kidneys. When, on the other hand, the demand for nourishment was reduced to a minimum by rest and feeding, the elimination of alcohol by the kidneys was easily demonstrated, even after so small a dose as an ounce and a half of whisky, or probably about six drachms of absolute alcohol."

In a series of experiments on the action of alcohol upon animal heat functions[1] in which the energy evolved was determined by a measurement of the quantity of heat formed, I found that while alcohol did not affect the total output, or if at all diminished it, it must decidedly have lessened tissue destruction, since, as experiment shows, it is almost completely destroyed in the system and thus gives rise to energy. It is obvious that since the total production of heat was not increased each unit of energy liberated through its oxidation must have replaced that which would normally have arisen in destructive tissue metamorphosis, hence tissue waste was to that extent diminished. The explanation of the virtues of alcohol in this connection is therefore manifest : first, in its power of causing mental exhilaration ; second, in its ability to yield energy through its own destruction.

Since the substances included in the alkaloid group do not yield any notable amount of energy, it is evident that their efficacy is dependent upon an action on the mind, or upon their ability to greatly excite the energy-yielding processes, or both. There can be no reasonable doubt but that the mental condition produced by all of these substances is a decided factor in accounting for the peculiar phenomena which are present, and it is also clear that since the drugs of this group cannot furnish energy, as does alcohol, that the tissues themselves must be preyed upon just in proportion to the increase of activity. The problem to determine, therefore, simply resolves itself into whether the increase of activity is primarily and essentially cerebral, or due to a direct stimulation of the energy-yielding processes.

[1] Therapeutic Gazette, February 15th, 1890.

In a series of experiments on the action of cocaine on animal heat functions,[1] I showed, as a uniform result of sixteen experiments on dogs, that after the administration of the drug the production of heat was enormously increased, in some experiments during the first hour after the injection as much as threefold the normal. So rapidly is heat formed, that the system is unable to throw it off, so that it accumulates within the body, causing an increase in the animal's temperature which may go 4° C. or more above normal, and which continues hyper-normal for many hours. The condition of physical excitement seems to progress *pari passu* with the changes in heat formation, so that when the augmentation of heat prodution is at its height physical excitement has reached its climax. Since under the conditions of such calorimetrical observations practically none of the energy evolved appears in any other form than heat, it is obvious that cocaine has powerfully excited the energy-yielding processes, and similarly and proportionately affected destructive tissue metamorphosis, the index of which being the increase in the number of heat units evolved.

In a similar series of experiments with caffeine[2] it was also shown that the production of heat was decidedly increased. While caffeine did not prove as powerful as cocaine, the action was always positive, even after small doses, during the entire period of experiment (five or six hours). Observations with nicotine and morphine, which have not as yet been published, demonstrate that they lack the positive actions of cocaine and caffeine. They sometimes increase and at others diminish heat production, generally the latter, although there is an evident tendency primarily slightly to increase, and secondarily to diminish, the evolution of energy.

From these studies it seems clear that the virtues of this remarkable class of substances are due to three chief actions, one or more of which may be characteristic of each member: the production of mental exhilaration, the excitation of the energy-yielding processes, and the ability to furnish energy through their own decomposition. They in common possess the power of causing mental excitement, but which differs greatly in degree, and appreciably in its nature, some of them affecting chiefly the imagination, and others the reasoning faculties. While the condition of the mind is favorable for the manifestation of the peculiar phenomena evinced, and is doubtless the essential factor in the actions of opium and tobacco, it is evidently but secondary with the preparations of alcohol, and with the cocaine- and caffeine-bearing substances. Thus the preparations of alcohol also tend to diminish the destruction of the tissues by supplying through their own disintegration the deficit of energy thus resulting, and may enable an enormous increase in the powers of endurance and of the ability for work, even where tissue change is at its normal standard, by supplying from their own potentially laden molecules the excess of energy demanded. On the other hand those agents, which depend upon cocaine or caffeine for their activity, while of themselves incapable of yielding energy, so powerfully excite the energy-yielding processes that the tissues are consumed at a correspond-

[1] University Medical Magazine, May, 1889.
[2] New York Medical Journal, April 26th, 1890.

ingly quickened pace, and the store of energy proportionately dissipated. Figuratively speaking, alcohol is fuel added to the fire, and to the extent of the energy which it can yield will save the fuel or add that much energy; but cocaine or caffeine act as a forced draft, supplying no energy in themselves, simply causing the fire to rage more fiercely.

AN ADDITION TO THE THERAPEUTICS OF EPILEPSY.

By Charles S. Potts, M.D.,
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Almost countless drugs and combinations of drugs have been used in the treatment of epilepsy, with the result that the various bromides, either singly or combined, have so far given the best results in relieving this distressing disease.

It is well known, however, that the bromides, when used persistently in large doses, cause various very disagreeable symptoms; therefore something which will be equally efficacious in lessening the number of epileptic seizures, and, at the same time, not cause these symptoms, is a desideratum.

With this end in view various drugs, as antipyrine, antifebrin and bromide of ammonium, were separately tried in the Clinic for Nervous Diseases, University Hospital, with but indifferent results, until September, 1888, when Dr. H. C. Wood suggested the use of antipyrine and bromide of ammonium in combination. Since that time this mixture has been used with excellent results in the treatment of forty-three cases of idiopathic epilepsy. In none did it fail to cause marked amelioration of the symptoms, and in some, as will be noticed in the cases reported below, it gave relief when all the other commonly-used remedies had failed, and in none have we had any indications of bromism, or of the disagreeable symptoms to which antipyrine sometimes gives rise.

The cases, the notes of which I briefly give, are a few that have been, I think, more than ordinarily benefited.

Case I.—W. B., aged 8; attends school. One aunt had epilepsy; otherwise, family history good. About one year ago he was taken with what his mother called a "spasm," and which she described as follows: "He suddenly fell to the floor, began to work all over, but was worse upon the left side, frothed at the mouth and bit his tongue. He was unconscious, and upon coming to he slept for twenty-four hours. Since this time the spells have been increasing in frequency, until he now averages about one a day."

This patient was first placed upon antifebrin in five grain doses three times daily, with considerable improvement. Between March 7th and May 25th, 1888, he had nineteen spells, or an average of one every four days. At the end of this time his spells began to increase in number again in spite of the dose of antifebrin being increased, and he was placed upon

antipyrine, gr. iv, t. d., with the result that in the next seven days he had twenty-four seizures, nearly four a day. Bromide of ammonium, gr. xv, t. d., was then tried, and the number of his seizures reduced to one every two days.

On September 28th, 1888, he was put upon a mixture of antipyrine, gr. iv, and bromide of ammonium, gr. x, and from that time until March 1st, 1889, he had but twenty-five seizures, or *one every six days.* At this date he ceased coming to the dispensary.

CASE II.—P. McK., male, aged 32, laborer, and native of Ireland, came to the dispensary October 30th, 1889, with following history: Since boyhood has been subject to spells, which begin by his vision becoming dim, tongue thick and arms and legs so weak that he is obliged to sit down; sometimes he shakes all over; the spells last about half an hour, and he is very drowsy afterward.

He claimed to be conscious during the spell, but upon close questioning this was found to be very doubtful. Specific history was denied. He had about one seizure a week. Antipyrine, gr. vi, and bromide of ammonium, gr. xx, were ordered to be taken three times a day, with the result that up to April 30th, 1889, when he ceased his visits, he had had only eight spells, much lighter than those which had formerly occurred.

CASE III.—R. B., native of this country, aged 16, and attends school. Has had spells since he was 4 years of age, in which he falls unconscious and becomes generally convulsed; does not bite tongue; no aura; has involuntary micturition. Movements begin in left leg and are worse upon left side. Drowsy after a seizure. Has from three to eight seizures every day, and his father says that he has taken all forms and combinations of remedies, *without benefit.*

He was ordered antipyrine, gr. vi, and bromide of ammonium, gr. xx, three times a day. He at once began to improve, and during the succeeding five months he had but thirty seizures, often going as long as a week without an attack. After this time their frequency began to increase in spite of the doses being increased, and the patient was obliged to enter the Philadelphia Hospital.

CASE IV.—J. F.; born in Pennsylvania; aged 60; brickmaker by occupation. For past twenty-five years has suffered from "spells," which he describes as preceded by sharp pain in stomach, he then becomes unconscious, bites his tongue, etc. Has one about every two weeks. He has been treated with bromide of potassium, etc., without a particle of relief. The antipyrine and bromide of ammonium mixture was given him, with the result that for four months he did not have a spell. He then had a light one. From that time until July 10th, 1890, a period of nearly five months, he had six spells, all of very mild character.

CASE V—W. S.; aged 22, laborer. Came to dispensary on February 21st, 1890, with ordinary history of idiopathic epilepsy. Had his first seizure three months ago, and during that time had had twelve spells. Under the use of antipyrine and bromide of ammonium he has had only two spells in five months.

This patient had also been previously treated with bromide of potassium without marked benefit.

These cases are only a few of those which have been greatly relieved by the use of this combination of remedies, but are, I think, sufficient to show its powerful influence over the epileptic paroxysm. That it is of more value than either drug used separately, a reference to Case I will show.

STREET-WIDTH: ITS CAUSAL RELATION TO THE MORTALITY OF PHTHISIS.[1]

By Howard S. Anders, M. D.,
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Under the caption of the present article the writer is not aware of any literature whatsoever in America; and but meager and limited statistics by one foreign author, namely, Dr. Arthur Ransome, of England. If, then, the data and inferences here adduced shall have prompted an interest in, or added their quota of information to a new and important phase of an old disease, from a sanitary point of view, he will feel amply repaid for an earnest though somewhat limited research after the facts as they may be.

Ever since Isocrates taught and Hippocrates wrote, pulmonary phthisis has been in its various aspects a *quæstio vexata*. Pre-eminently, the high mortality-rate of this disease has commanded the awe of both physicians and laity.

It may be superfluous here, if not irrelevant, to detail statistics corroborative of the unparalleled death rate from phthisis; but to confirm its relative importance in the study of this question pertaining to public hygiene it may suffice to offer a few general and indicative truths collated from reliable authorities. From Bateman[2] and Dr. Willan's statistics we glean that during the seventeenth and eighteenth centuries from 33 to 50 per cent. of the deaths in Great Britain were due to phthisis. In New York city (1804–1859) the number of deaths averaged 1 in 6.15[3]; the health reports of Rhode Island show that for the years 1867 to 1883 inclusive, the percentage of deaths in that State was 17.9; while in our own city of Philadelphia, about 12½ per cent. of those who die succumb to phthisis—nearly three times as many as from any other disease. Again, of its progressive virulence no clearer instance could be cited than the extensive clinical experience of the late Professor Austin Flint, whose observation showed that more than 90 per cent. of the phthisical cases were fatal. Finally, it is estimated that 14 per cent. of the deaths from all known causes throughout our land are due to consumption of the lungs.

And yet the mortality from this formidable affection has undoubtedly diminished within the last two or three decades, as has been widely acknowledged by the older medical observers. A glance at the mortuary reports of the large cities in this country and of the British Registrar-General will show the same result.

What, then, has occasioned this reduction in the death rate? Since no specific remedy has been discovered, it must be attributed to the improved

[1] A Topographical Study of the Fifteenth Ward of Philadelphia.
[2] "Historical Survey of the Diseases of London," p. 22.
[3] H. B. Millard, "The Climatology and Statistics of Consumptiou."

hygienic surroundings of the patients. Admittedly, also, a more general recognition of the value of municipal sanitary rules in preventing the spread of infectious diseases doubtless has been to a great degree prophylactic against phthisis, for its contagiousness may now be considered as established. However, the *topographical improvement of cities* to limit and lessen the diffusion of tubercular virus, as a factor in the mortality apart from the etiology of consumption, has not received the public or professional attention that it surely requires. Neither can it be expected that the predisposition to acquire this disease will be much ameliorated so long as the imperfect and positively harmful conditions of street ventilation, in which a considerable part of our urban population lives, are steadily ignored.

The free course of pure air through *wide*, *unobstructed* streets is as clearly necessary for the proper ventilation of cities as it is for the ventilation of habitable rooms. Indeed, without the former the latter would be certainly incomplete and defective. Streets are the ventilating flues of cities and they should be ample in width. We hear and read much wholesome, practical and scientific counsel concerning the ventilation of our dwelling houses, auditoriums and hospitals, yet how little thought or energy is devoted to an hygienic truth which is no less essential to the public weal. Says a high sanitary authority: "In cities, an efficient system of indoor ventilation must go hand in hand with an efficient system of outdoor ventilation, the one always implying the other."

That the high mortality-rate from phthisis would be effectually reduced by a suitable system of street ventilation in our crowded communities there is every reason to infer. Hartshorne has truly said: "The influence of impure air in promoting consumption has probably heretofore been underrated." It might well be urged that as the velocity of wind through streets is inversely proportional to their widths, therefore in high winds the air passes too rapidly in narrow streets to enter the houses except as fitful and unwholesome gusts; while during the sultry days of summer, when the air is seemingly motionless, a deficient cubic air-space only serves to augment and concentrate a poison-laden breathing medium, so that "a gently passing current, which is the true meaning of ventilation," is impossible. Lungs which must partake habitually of an impoverished atmosphere are thus rendered easily liable to phthisis, while the latent disease becomes speedily fatal.

Most medical writers upon the subject maintain that occupation may predispose to consumption. In this connection it may be shown that defective street ventilation becomes in such cases not only an exciting cause of disease, but virtually promotes a higher death-rate. For it has been ascertained[1] that among diamond polishers, who are particulary liable to phthisis but well paid and comfortably housed on the wider streets, the mortality is admirably low. On the other hand, mark the high percentage of deaths from this affection among needle-grinders whose occupation is not more deleterious to the lungs, but who, less favored by domestic environments, live in the lowly and crowded places of a city. Again, in the large manufacturing towns of England and in Brussels, where nearly all of thousands of cotton operatives live in narrow streets and

[1] *Vide*, article "Vital Statistics," in Buck's Public Hygiene.

courts, the deaths from consumption are so common and numerous that it has been called the *phthisie cotonneuse.*

As before intimated, the contagiousness of phthisis is believed by the majority of medical scientists to depend upon the dissemination through the air of bacillus-containing particles of dried sputa. This has been confirmed more recently by the observations of Cornet and Dr. Flick.[1] Thus: "The same conditions which intensified the contagion of the diseases long acknowledged to be contagious, increased the operation of that of phthisis. For instance, the disease was most frequent where people were crowded together, as in prisons, etc." Dr. H. N. Biggs, of the Carnegie Laboratory, speaking of the specific nature of consumption said, that he considered the tubercle bacilli capable of causing the disease without the assistance of any other factor, provided that a sufficiently large number of them are admitted to the system. How evident must be the fact, then, that hindrances to the free motion of the atmosphere by closely-built houses and narrow, tortuous streets favor the accumulation and concentration of tuberculous matter so generally prevalent. How true must this be of neighborhoods already infected! And can we wonder that the death-rate there is enormous? Bryson,[2] of England, states that in foul atmospheres the bacilli acquire mortally virulent infective powers; and Ransome[3] suggests that their sporulation is greatly assisted by contact with the organic matter which usually pervades such air. So we have in poorly ventilated and restricted street areas at once predisposing and exciting causes of a large fatality from tuberculosis of the lungs.

A study of the topography of streets is evidently indicated. Do the breadth-measurements of streets so affect their cubic air-space that the mortality from phthisis is influenced thereby? Are the general facts and premises before adduced cogently sustained *a posteriori* by the figures thus to be learned and arranged?

The interesting investigations of Dr. Ransome showing the unfavorable influence of narrow streets over the death-rate from phthisis in Manchester, have prompted me to find out whether they are upheld or contradicted by the results of other researches. It may be both appropriate and just to preface my own statement with his. He writes: "The longest and widest streets in the district were Jersey Street, with ten deaths, and George Street, with eight deaths; but the number in these streets is approached by the mortality of eight deaths in Hood Street, which is only half its length, but which is a mere lane, blocked at each end, so as to obstruct free ventilation. Again, Henry Street, which is a long thoroughfare, has only four such deaths, while Boord Street, a narrow *cul-de-sac*, only quarter its length, has seven."

In order to demonstrate whether any relation, positive or negative, existed between street-width and the mortality-rate of phthisis in Philadelphia, I began in the summer of 1889, and continued for several months, a topographical study of such cases in the Fifteenth Ward which died during fifteen years from 1874 to 1888 inclusive. For the basis of the research this ward was selected for

[1] Quoted by Professor Tyson, Jour. Amer. Med. Assoc'n, May 18th, 1889.
[2] Parkes, Practical Hygiene. [3] Idem.

several reasons, as follows: 1. Because of the large number of deaths reported; 2. On account of the streets, typically very wide, narrow and medium in width, which it contains; 3. Its elevation and its proximity to Fairmount Park, circumstances which would convey double force to a positive relation between a high mortality-rate from phthisis and narrow streets in that vicinity; 4. A great number of streets running diagonally to the main ones; 5. A proportionately larger population in the wider streets; 6. The presence of several large penal institutions.

In examining carefully the Board of Health records[1] for the fifteen years, 1768 deaths from phthisis were reported from this ward. Of these, 103 were eliminated from consideration on account of errors in some of the returns of physicians and undertakers, as well as deaths reported from the offices of the latter. The mistakes were discovered when the cases came to be located on the map in streets not in the ward; or, where the house numbers were undeterminate. There remain, then, 1665 cases, fully 94 per cent. of all that were recorded. I proceeded at once to draw a diagram of the ward on a scale thrice its size as represented on the index to Hexamer's Insurance Maps of Philadelphia. This completed, the number of the house at which each case died was jotted down on large tabulated sheets. The latter contained double sets of columns so arranged that the even and odd house-numbers were separated, and at the same time collected for their appropriate blocks. The aggregate numbers of deaths were then transferred to their proper positions on the map. Finally, on obtaining access to the city charts of the Bureau of Surveys, the official street width-measurements were noted.

The Fifteenth Ward is bounded on the North, East and South by Poplar, Broad, and Vine Streets respectively, and on the West by Fairmount Park and the Schuylkill river. Its area is about one square mile. A glance at the diagram will show that many of the streets are medium in width, some are narrow, with a few "*cul-de-sacs*," and several are comparatively very wide. In what was originally called *Francisville*—that locality bounded by Poplar Street and Fairmount Avenue, and Seventeenth and Nineteenth Streets—the streets are observed to deviate from the common trend.

On closer study the following general facts are observed: That the number of deaths from phthisis on a very wide street is proportionately small compared with almost any one narrow street; that the same is true with reference to the aggregates of several wide and narrow streets; that a very high mortality prevails in certain groups of small streets; that the mortality is even low in all streets of medium width; that, in short, in narrow streets which are blocked at one or both ends it is notably increased. As these points are of fundamental value to any conclusions, it is desirable to take them up *seriatim* and in detail.

Fairmount Avenue, a wide street which measures eighty feet in width, has fifty-nine deaths from phthisis along its entire length through the ward, of over eleven squares; whilst adjacent narrow streets running but a square or two with blocked ends, show a much higher death rate proportionately, thus: Bar-

[1] To Messrs. Turner and Murray, of the Registry Department, Philadelphia Board of Health, I am sincerely grateful for many kind and helpful suggestions.

clay Street, thirty-six feet wide, has sixteen deaths; Beckett Street, from twenty-two to thirty-two feet wide, has fifteen; Olive Street (twenty-two feet), seven deaths; Virginia Street (twenty to thirty feet), twenty-four deaths, etc. If we compare the number of deaths for so many squares on a wide street to an equal length of a narrow street close by, the contrast is still more forcible. Thus, we have nine deaths on Fairmount Avenue to sixteen on Barclay Street; ten to twenty-four on West Street, which is only half as wide; sixteen to twenty-four on Virginia Street, and so on. Again, Spring Garden Street, which is very wide (120 feet), has but thirty-four deaths for eleven squares, while Earp Street, twenty-two feet wide, but one square long, has nine deaths; Gold Street (thirty feet), tortuous through one block, has eleven deaths. The mortality of three blocks of Green Street, which measures seventy feet in width, with nine deaths, is exceeded by twenty-two deaths in Brandywine Street (thirty feet). Hamilton Street is sixty-six feet wide, with twenty-four deaths, between the railroad and the Park; whilst Biddle Street, thirty-five feet wide, has eighteen deaths for half that distance; Ralston Street (twenty-two feet), has ten deaths for one square; Owens Street (twenty feet), also shaped like two joined L's, has thirteen deaths. It may be noted here that Buttonwood Street and other adjacent parallel streets have but few dwelling houses east of Nineteenth Street, hence the few deaths recorded there will be understood. Francisville is not lacking in evidence. Compare Vinyard Street, sixty feet wide, and four deaths, or Perkiomen Street (fifty feet wide), five deaths, with short, narrow streets like Geary Street (thirty feet), with nine deaths, and Edwin Street (twenty-eight feet), with seven deaths, etc. To the high character of the land, as well as the varied direction of the streets here and better possibilities of street ventilation, therefore, may be fairly attributed a less marked contrast between wide and narrow street mortalities. Callowhill Street is apparently an exception to the preceding observations. It is seventy feet wide and has eighty deaths; but Carlton Street, ranging from twenty to thirty feet in width and about two-thirds as long has sixty-four deaths, so that the mortality here is still relatively high. Wood Street has one hundred and one deaths. Some topographical peculiarities of Callowhill Street in this connection will be discussed in a subsequent paragraph.

In reference to the second and fourth general propositions, it is evident that the total number of deaths in the wide streets, or those of medium width (all fifty feet), is considerably less than that of the aggregated narrow streets of the ward.

That the third statement, viz., that a very high mortality prevails in certain groups of small streets, is true, will appear on a moment's examination of the diagram. Thus, in the narrow streets just west (to the left) of the Penitentiary many deaths are collected. Again, of the narrow highways in and about Francisville, the mortality is manifestly high: *e. g.*, Matlack Street (thirty feet), one square long, has thirteen deaths; while Twentieth and Parrish Streets (fifty feet each), nearest by, have respectively twenty-nine and seventeen deaths for many blocks. The region between Green and Callowhill Streets and from Twenty-first to Twenty-fifth Streets, as well as a group of small streets above the railroad between Eighteenth and Twentieth Streets, have numerous deaths.

I think the observed association of a high death-rate in the small streets will be acknowledged as not without considerable interest. As before hinted a large mortality in the narrow streets near the Park is particularly significant, for it points out that although a better atmosphere may be near at hand, if not freely accessible for ventilating purposes it avails nothing.

Recourse to the subjoined tables in conjunction with the map, will aid in verifying my observations still further.

WIDTH OF STREETS RUNNING NORTHWARD.

STREETS.	WIDTH.	STREETS.	WIDTH.	STREETS.	WIDTH.	STREETS.	WIDTH.
	Feet.		*Feet.*		*Feet.*		*Feet.*
15th, 16th, etc.,	50	Capital.	30	Judson	30	Perkiomen	50
Bambrey	30	Carlisle	40	Matlack	3	Ridge Ave	60
Barney Ave	20	Caven	25	Newbold	16	Ringgold	30
Bellevue	30	Corinthian Ave.	80	Osprey	20	Shirley	50
Bucknell	30	Dubree	20	Pagoda	25	Taney	40
Burns	22	Geary	20-30	Pennock	40	Taylor	30
Cameron	30	Howard	35	Penna. Ave.	80	West	40

WIDTH OF STREETS RUNNING WESTWARD.

STREETS.	WIDTH.	STREETS.	WIDTH.	STREETS.	WIDTH.	STREETS.	WIDTH.
	Feet.		*Feet.*		*Feet.*		*Feet.*
Barclay	36	Fairmount Ave.	80	Murray	20	Shamokin	26½
Beckett	22-32	Francis	55	North	40	Springett	30
Biddle	35	Grayson	40	Ogden	40	Spring Garden.	120
Brandywine	39¾-30	Grove	36	Olive	22	Swain	25
Brown	50	Green	70	Owens	20	Tatlow	30
Buttonwood	40	Gold	30	Parrish	50	Valeria	40
Callowhill	70	Hamilton	66	Pearl	22-18	Vinyard	60
Carlton	22-20	Hare	50	Perot	30	Virginia	20-30
Clayton[1]	30	Markham	22	Ralston	22	Wallace	30–50
Earp	22	Meredith	30	Rhoads	22	Wood	40
Edwin	28	Mt. Vernon	50	Rockford	16-10	Wylie	60

The mortality from phthisis in Callowhill Street, which is relatively wide, has been shown to range rather high. An opportunity occurs for an explanation of this seeming contradiction. Here the regular blocks of houses are divided into sections by small streets intervening, the backs of the buildings being necessarily close and the air consequently confined and stagnant. In investigations for the Local Government Board,[2] by Dr. Barry and Mr. G. Smith, of England, the mortality in "back-to-back" houses has been found to be especially large. Dr. Ransome also affirms with good evidence that in Manchester and Salford the streets most infected with phthisis are the most confined and ill-ventilated, and that the larger proportion of deaths took place in the "cave-like, back-to-back" dwellings. Referring to the map not only Callowhill Street, but other wide streets as well, show that almost invariably where many deaths occurred in any one block one or more smaller streets are seen behind the main one, the backs of the houses so crowding one another as to leave little ventilating space.[3] Con-

[1] Old nomenclature: now called Virginia Street.

[2] Parkes' Practical Hygiene.

[3] Examples may be seen as follows: Hamilton Street between Nineteenth and Twentieth, and Twenty-second and Twenty-fourth Streets; Spring Garden Street between Twenty-third and Twenty-fourth Streets; Twenty-fourth Street between Green and Spring Garden Streets; Fairmount Avenue between Fifteenth and Eighteenth and Twenty-second and Twenty-fifth Streets; in both Hare and Brown Streets, between Twenty-second and Twenty-fifth Streets; Broad Street between Parrish and Brown Streets; in Wylie and Francis Streets, and so on. Bare evidence like this speaks for itself.

STREET LOCATION OF DEATHS FROM PHTHISIS FOR FIFTEEN YEARS, IN THE 15TH WARD OF PHILADELPHIA.

versely, where several small streets run through a block the number of deaths in them is also markedly high, as if there was a reactionary influence involved in addition to the direct factor of street-narrowness. It is a noticeable feature, too, that Callowhill Street is near the base of "Cherry Hill" (sloping downward from about the middle of the ward), an element which, with the large population resident on that street, renders more explicable the high death-rate from consumption there. Figures of street population would be desirable for further comparison were such population sufficiently fixed for the fifteen years to give reliability to the statistics. However, I have learned that lengths being equal, the *population in many narrow streets is less than in wide ones, where the mortality is less.* Even when this does not hold good the main argument is maintained, since a proportionately larger population in small streets must then mean overcrowding and inadequate street ventilation from the sanitary standpoint.

Cul-de-sacs, so called, are few in the Fifteenth Ward, but it has been pointed out before that narrow streets of only a block in length show an increased rate of mortality from phthisis quite remarkable.[1] Of the nearest approaches to the characteristic *cul-de-sac* instances are as follows: Newbold Street (sixteen feet), with four deaths; Owens Street (twenty feet) thirteen deaths; Gold Street, Bambrey Street, etc. It may not be uninteresting to note also that where in its course a street has become narrower, the mortality appears to increase; *e. g.*, Wallace Street, three blocks west of Twenty-second Street and thirty feet wide, had seventeen deaths, while for three blocks eastward (fifty feet wide) only ten deaths are recorded.

A comparison of the mortality figures of any one of these with an adjacent wide street will still demonstrate the relatively higher death-rate in the pouch-like streets. Yet this is not so marked as might be expected, especially in those districts where the small streets occur singly and not in groups. When, however, we consider the juxtaposition of this ward to the Park and the higher elevation of portions of its land, it must be obvious that for the general ventilation of its streets the ward is advantageously situated, and in so far should we anticipate only a *moderate* death-rate—other conditions remaining the same—were the streets uniformly wide.

Types of the true *cul-de-sac* are found in the lower and older parts of the city, as in the Fifth Ward. The mortality figures of phthisis collected by Dr. Flick[2] and my own street-width measurements of that ward, tend to prove the relation for which I contend in this paper. A few examples will suffice for proof: Southampton Court (eight feet wide) and Hager Place (eight and three-quarters feet) have each six deaths, while Levant Street (forty feet), four times the length of either, has but four. Jones Court (eight feet), a *cul-de-sac* with five houses, had seven deaths, as contrasted with five for one block of Sixth Street, populous and fifty feet wide. A corroborative fact was observed in comparing narrow and wide streets where the population is more

[1] To account for the absence of figures in some small streets, as Monterey and others, I have observed, in person, that there were no dwelling-houses there.

[2] "The Contagiousness of Phthisis."

equally divided in this ward; and while the death-rate in the former over the latter was actually and relatively enormous, yet in the wide streets it was also high—showing the influence of "back-to-back" dwellings which prevent cross or through ventilation.

A word as to the penal institutions in the Fifteenth Ward. The causal and prognostic relations between foul air from insufficient ventilation and phthisis has long been recognized. For the fifteen years the number of deaths from this disease in the House of Refuge was twenty-one. In contrast to this the dismal Eastern Penitentiary, with its high walls and gloomy cells, records ninety-five deaths. There may be added here the declaration of a British writer, that since matters of cubic air-space and ventilation have been attended to the servants and prisoners of state do not at the present time exhibit as high a death-rate from phthisis as the males of the same age in the classes from which they were derived.

The preceding observations show that there is plainly and generally a high mortality-rate from consumption associated with street narrowness in not a small part of Philadelphia. From the assumption, then, of the well-known fact that the major portion of the city's population live in narrow streets (although this is not true of the Fifteenth Ward), and from the fact, as before proven, that the death-rate from phthisis is relatively high among these residents, the conclusion is logically justifiable that the relation between such a high mortality and narrow streets is a positive and vital one, which is readily explainable from what has been premised regarding defective street ventilation and its deleterious effects in predisposing to and exciting the tubercular process in lung tissues.

It may safely be stated that there are causes of phthisis operating in overcrowded districts beyond the control of sanitarians. But with the labors of such men as Billings, Dujardin-Beaumetz and Jaccoud, practical bases for rational and feasible sanitation in this regard certainly deserve more earnest, liberal and dispassionate consideration than they have received.

MEMORANDA.

LEAD POISONING TREATED BY PHLEBOTOMY.

THIS method of treatment being comparatively new, so little practised, and withal, in the cases here recorded, so satisfactory, I think it well worth while to secure for it more prominent attention.

CASE I.—J. S., aged 39, was admitted to the Philadelphia Hospital May 24th, 1890, with the following history: He had been an iron puddler for seven years. On January 5th, 1890, he went to a white lead factory. His work consisted in packing the lead in kegs, loading the kilns, etc., in all of which employment his right hand was used more than the left. May 22d was the first time he noticed any marked ill effects, though his bowels had been constipated, and he had had abdominal cramps for some time. On this date, while loading a kiln, he suddenly became quite faint, and noticed that his right arm was very weak. He at once left the factory and went home. The next day he tried to resume his work, but finding he was too ill to do so, entered the hospital the following day.

Examination showed a blue line on the gums, very marked; impairment of power in the right hand, less marked in left; wrist drop not absolute. The patient was able to raise his hand until it was in a line with his forearm. Attempts to raise his hand caused a spasm of the flexor muscles of the forearm and of the thumb. This spasm was quite severe, but did not last long, and the hand could then be brought on a line with the forearm.

Treatment.—On May 26th the patient was bled, f℥xvi being taken. One and a half hours later the hand could be raised nearly three inches higher than before he was bled, and muscular spasm was entirely absent. Sixteen hours after bleeding, flexion and extension were almost perfect. The grip was much better, and the pain in the abdomen was much less severe. Twenty-six hours after bleeding the condition of both arms was normal, and the patient had a normal bowel movement. Three days later the patient had a short but quite severe attack of colic. The bowels were moved normally; the blue line was gone. A few days later he was discharged cured.

In this case the results of treatment were most satisfactory. One bleeding cured instantly and permanently the spasm of the right hand. Not only this, but within a few days the abdominal symptoms, and even the blue line on the gums, had disappeared.

CASE II.—Michael C., aged 44, was admitted to the Hospital June 25th, 1890, and gave the following history: Up to April 18th, 1890, he had been in the employ of the Pennsylvania Railroad. On April 18th he went to work in a white lead factory. He had been perfectly well up to that time. His work consisted in packing the finely powdered lead into barrels. About June 18th he began to have severe cramps in the abdomen, and noticed that his bowels, which had been constipated for some time, were getting worse. He also noticed a loss of power in his hands.

An examination showed the blue line on the gums well marked. There was loss of power in both hands, so pronounced that he could hardly grasp anything. There was some wrist drop most marked in right hand, as was the loss of power. He complained of a constant headache and pains in abdomen, forearms and legs.

Treatment.—On June 26th, f℥xvi of blood was taken from the left arm. Four hours later the cramps in the arms were much better. Sixteen hours later the cramps in the legs

were gone, the abdominal pain was still present, but much less severe. The grip was markedly improved. The patient said that the left side of his body felt better than the right. The grip on the left side was certainly improved more than that on the right.

June 28th, the grip was normal in both hands; cramps in arms and legs were cured. There was still some pain in the abdomen, and the bowels were constipated.

July 5th, potassium iodide, thirty grains three times a day, was ordered. Two days later it was stopped. The next day, July 8th, constipation and headache still continuing, the patient was bled again, twenty ounces being taken. On the next day both the headache and abdominal cramps were nearly gone, but constipation was still present. Two weeks later the bowels were normal, and the man seemed perfectly well.

This case was evidently of longer standing than the preceding one. Here the principal result of the bleeding was the restoration of power to the forearms. The abdominal symptoms were less relieved, still they yielded more rapidly to subsequent treatment than would be the case where bleeding had not first been resorted to. The man when admitted was markedly cachectic. This cachexia was uninfluenced by the bleeding, but has been since steadily disappearing under treatment.

CASE III.—Patrick C., aged 34, admitted to the Hospital March 27th, 1890. History similar to Case II, except that the wrist drop was more marked. On March 28th he was bled, about f℥xiv of blood being taken. There was marked improvement within twenty-four hours, and he was discharged cured a week later.

Here, while the case was about as long-continued as Case II, there was comparatively no cachexia, and the results of bleeding were decided and permanent.

While these cases are too few in number to base any extended conclusions upon them, yet the results of bleeding were certainly much more satisfactory than those likely to be obtained by any other treatment. None of these cases had probably gone on to any organic lesion of the nervous system. The relief is probably due to two causes: First, as in Case I, to a relief of focal congestion in the cord or nerves; second, to a change in blood tension, facilitating the rapid elimination of the lead. I do not think, from the character of the patients, that there was any psychical element in the cure. No observations were made upon the lead in the blood, nor on the elimination of the lead after bleeding.

To Dr. B. Brooke, the resident physician in charge of the wards, I am indebted for a careful study and notes of the cases.

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PODOPHYLLIN AND MERCURIC CHLORIDE IN DIARRHŒA.

THE purpose of this brief note is simply to call attention once more, as has been done so frequently by others, to the advantages gained by the use of both the drugs named above in diarrhœa, a trouble which the physician is constantly called upon to treat during all the months of the year, particularly in children. As with many other things in medicine, the knowledge that these drugs are employed by the uninitiated without specific information as to the time of their employment, renders their use almost impossible in this way.

Two forms of diarrhœa exist which should be treated by their use. The first is that dependent upon deficient secretion of the various intestinal juices; the second upon fermentation and irritation of the intestine, with the formation of mucus in the alimentary canal. In the instances where secretion is defective, podophyllin in minute amounts is of value, and the indication for its employment is a history of constipation accompanied by the occasional passage of slightly colored or greyish stools, which has ended in a sudden reversal of symptoms, consisting in a watery diarrhœa of a more or less profuse type, containing particles of curdled milk or pieces of food semi-digested. These passages are often somewhat musty or mouldy in odor as the case progresses, and the entire attack is one in which the patient rapidly wastes, has persistent vomiting, and almost uncontrollable watery purging, which, if it be retarded briefly by powerful remedies, seems to renew its vigor through delay. Under these circumstances the following prescription is of service for a child of from 16 months to 2 years:

℞ Resinæ podophylli, gr. i
Alcohol. f℥i. M.
Sig. One drop in a teaspoonful of water every five hours.

In an older child two grains may be placed in the prescription instead of one. As soon as the passages begin to show slight evidences of intestinal secretion, as may be noted by the appearance of some tinge of yellow or brownish color, the physician will recognize that his remedy has not failed, and with the employment of proper diet can regard the child as on the way toward recovery. Generally, persistence in the use of this drug in the manner named for a day or two longer will bring the intestinal movements to a natural state without producing constipation, an extreme generally arrived at if astringents are employed.

The second form of diarrhœa is that in which the mercuric chloride is of value. It is characterized not by watery stools, but by mucous passages in which flakes or masses of mucus float in a little watery liquid, or are passed from the bowel alone or mixed with threads of blood. Sometimes particles of

food are seen embedded in these masses of mucus, which by their toughness prevent the digestive juices from acting on the food, which they envelop like the gelatine coating of an old pill.

The following prescription is now of value :

℞ Hydrarg. chlor. corros., gr. 1-5
Aq. destillat., f℥ii. M.
Sig. Teaspoonful every five hours.

The physician must insist on the druggist using distilled water, as if tap-water is employed the mercury salt will be decomposed, and a precipitation will occur, rendering the treatment both useless and harmful.

The writer has not described this treatment as one which is new, but because he has found it very useful, and thinks that many members of the profession do not recognize its value. It will not succeed in every case, but will often give relief in obstinate attacks in which ordinary measures have failed.

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A CASE OF LITHOTRITY SUBSEQUENTLY REQUIRING SUPRAPUBIC LITHOTOMY.

J. F., aged 8 years, came to the Howard Hospital on July 29th, 1890, complaining of pain during and after the act of urination. This pain was referred to the end of the penis. On examination, a hard stone was found in the bladder, measuring seven-eighths of an inch in diameter. One week later the child was etherized, the bladder was moderately distended with a 3 per cent. boric acid solution, and the stone was crushed by Dr. Edward Martin. Upwards of an hour was spent in this crushing process. The stone was so hard that it was feared the small lithotrite would be broken. The urethra was so small that it was impossible to pass an evacuating tube, hence the child was allowed to pass the fragments spontaneously. Immediately after the operation he began evacuating the fragments of stone. Some were of a size which would seem to make it impossible for them to pass through the urethra. The majority, however, were very small, and much fine dust was evacuated. The passage of these fragments caused great pain ; this was so severe that the screams of the child could be heard over the whole hospital, and was accompanied by so much straining that involuntary passages from the bowels took place.

On the second day the penis became very much swollen and indurated. The child was unable to pass any water, and evacuation of the bladder required the use of a catheter. Pain, straining and swelling steadily increased in severity, and there was no abatement of the child's suffering except that produced by the free use of opium and belladonna suppositories.

On the fourth day the urine became loaded with mucus and bladder epithelium, and the temperature rose to 100°. By the seventh day upwards of a hundred fragments had been passed, but the general condition of the child was little better, and he began to show symptoms of exhaustion from his long-continued suffering. Dr. Martin therefore deemed it advisable to perform suprapubic lithotomy.

The bladder was gently filled with a 3 per cent. boric acid solution. This was injected by means of a fountain syringe attached to a soft catheter, the irrigator being raised two feet above the level of the pelvis. The catheter was then withdrawn, and, without using the rectal bag, a two inch incision was made in the middle line extending from the pubic symphysis upward. The prævesical fat was readily reached; this was stripped upward by the fingers of the operator, two silk threads were passed through the outer coats of the bladder wall, the latter was held well forward and was incised. Many fragments, some of large size, were found in the bladder. These were removed either by picking them out with forceps or by irrigation. The external wound was partially closed by sutures, a large drainage tube was carried into the bladder, and the wound was dressed with several layers of bichloride gauze supplemented by large wads of absorbent cotton, held in place by a three tail binder. For five days this dressing was changed every two hours, the child being induced to lie first upon one side and then upon the other. At the end of this time the tube was removed.

On the tenth day urine ceased escaping from the wound, and shortly afterward the latter definitely healed and the child went home well.

There has been much written lately in favor of the crushing operation in treating vesical calculi occurring in children, and it was partly because he was guided by the warm recommendations of this method that Dr. Martin was induced to try lithotrity. The intense and prolonged suffering of the child after the operation positively indicated some means for his relief. The suprapubic operation was followed by an entire cessation of all suffering, and the child thereafter remained entirely comfortable excepting for one complication. The dressings applied about the wound and over the surface of the abdomen were wrung out in 1-4000 bichloride of mercury solution. On account of the use of opium and belladonna suppositories the child remained constipated for several days after the cutting operation. To relieve this, a sixth of a grain of calomel and two grains of bicarbonate of soda were administered every half hour for four hours. This was followed by griping pains and repeated bloody passages from the bowels. This was diagnosed as mild mercury poisoning. Boric acid was used in place of the bichloride, the bowels were moved freely, and the symptoms quickly subsided.

Clinical reports show that the majority of stones in children are exceedingly small, some being mere shells; in such cases lithotrity would probably be successful, but where the stone is large and hard, as in this case, the crushing operation would not seem to be indicated until some means of evacuating the fragments immediately after crushing is devised.

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A CASE OF SUTURING THE EXTENSOR TENDONS OF THE INDEX FINGER.

W. S., aged 21 years, came to the University Hospital on June 5th, 1890, with three ragged lacerated wounds on the dorsum of the right hand, caused by being caught in a planing machine. He was bleeding very profusely, having cut most of the superficial veins.

It was at once noticeable that the index finger remained flexed while the others were extended. Examination showed that the tendons of the extensor communis digitorum and extensor indicis muscles were completely severed. After the bleeding vessels were secured and the parts cleaned, the distal ends of the tendons were seen at the bottom of one of the wounds while the proximal tendons were not visible. A grooved director was inserted in the tendinous canal and a counter opening made a short distance anterior to the annular ligament. At the bottom of the incision were found the proximal ends. These were secured by a pair of forceps. Another pair was then inserted in the original wound and along the canal where the grooved director had been carried, the divided tendons were drawn down, and their continuity was restored by means of cat-gut sutures. The tension was quite marked, since retraction had separated the divided ends about two and one-half inches.

The external wounds were approximated by means of silkworm-gut, dressed antiseptically, and motion was prevented by means of a splint.

The stitches in the external wounds were removed in about five days. The patient made an excellent recovery and had perfect control of his index finger, its movements being absolutely normal.

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GANGRENE OF CHEEK FOLLOWING PNEUMONIA.

The report of a case of gangrene of the cheek in a child 8 years old, in the January number of the Magazine, led me to look up a similar case which occurred in my practice five years ago, and which I had photographed at the time. Having found the patient and secured a recent photograph, I send both pictures, together with a brief history of the case.

While Willie McF., aged 8 years, was slowly convalescing from a severe attack of malarial fever (the so-called typho-malarial) pneumonia set in. When this disease relaxed its hold upon him his condition was desperate indeed. At this time he called my attention one morning to a "sore tooth" (the first bicuspid, upper left side), saying he thought he was getting a "gum boil" there. An examination showed a slight swelling of the gum, with tenderness on pressure; the color was a deep red; there was no fluctuation.

At my visit the following morning I noticed a dark-red spot on the left cheek. An offensive odor coming from the mouth disclosed the nature of the trouble. With the same rapidity, the gangrenous disease advanced till, within an incredibly short time, the whole cheek was a black, foul-smelling slough. As soon as the line of demarcation formed, the

dead tissue was removed by forceps and scissors, exposing the upper and lower maxillæ to a very large extent. The periosteum of the upper maxilla was extensively involved, and subsequently a large piece of this bone loosened and was taken away. It extended from the first bicuspid to the last molar, and separated on a line with the anterior nasal spine and articulation with the malar bone, including the floor of the antrum. In addition to this, there occurred a perforation of the nasal septum.

FIG. 1.

The parts were bathed frequently with a solution of potassium permanganate and dressed with iodoform. As both respiration and deglutition were very seriously interfered with, and the boy exhausted to the last degree, all efforts were concentrated in the direction of his nourishment. The quinine and other medicines which he had been taking with great difficulty were discontinued, and a solution of ammonium carbonate prepared and given very frequently and largely in milk, or milk and eggs. Although other forms of concentrated liquid nourishment were given him, the main reliance was placed upon the ammonium carbonate and milk combination, which was taken by him freely and with relish.

After the necrosed bone separated, and the tongue began to clean, the following emulsion was substituted:

℞	Ol. morrhuæ,	℥iv	
	Ov. vitel.,	ij	
	Ac. phosphor. dil.,	℥j	
	Vin. xerici,	℥iv	
	Ol. amygdal. amar.,	gtt ij	
	Syr. simplicis,	℥j	
	Aquæ,	q. s. ad ℥j.	M.
Ft. emuls.			
Sig.—Tablespoonful after meals.			

A glance at his recent photograph shows what nature has done for him in the way of repair. The extensive cicatrix almost entirely prevents separation

of the jaws—a movement of about one-fourth of an inch being the limit. The lower teeth are intact, and prevent any dribbling of saliva. Through a small opening between the upper and lower teeth he passes his food, rolling it around with his tongue and swallowing it readily. He tells me that his diet is not at all limited to soft food, as he frequently indulges in pretzels, fruit, candy, nuts, etc. On several occasions he has vomited, but had no difficulty in ejecting the contents of the stomach through the small opening.

FIG. 2.

His voice is not unpleasant, and his articulation is fairly good. He attends school, and joins in all the sports of his playmates. So as to be presentable, he keeps the opening closed by means of a patch smeared with an ointment of beeswax and lard of such consistence as to make it adhere to the surrounding skin. In the hands of a surgeon skilled in plastic surgery something might be done for this manly little fellow.

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CLINICAL DEPARTMENT.

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ERGOT IN THE ORDINARY SORE THROAT OF PHTHISIS.

[Service of Dr. WILLIAM E. HUGHES.]

CASE I.—Michael Q., aged 35, was admitted about the middle of June in an advanced stage of phthisis. A few days after admission he complained of sore throat, which, in spite of treatment, grew steadily worse, until finally he could hardly swallow so great was the pain. He also complained of great dryness of the throat and mouth.

On examination, the pharynx was found to be greatly congested, and a few small ulcers were seen. One day the man had a slight hemorrhage, and ex. ergot fl., ʒij, was given. The next day the patient said his throat was much better, and asked for some more of the "brown medicine." He was put on ex. ergot. fl., ♏ xx, three times a day, and in five days said his throat was perfectly well. A thorough examination of the throat could not be made on account of a partial anchylosis of the left tempero-maxillary articulation, and great tendency to vomit. The patient lived for about two weeks, but had no return of the sore throat.

CASE II.—B. J., colored; was admitted, suffering from phthisis, and complained of great dryness of the mouth and throat, and some pain on deglutition. He was at once put on fluid extract of ergot, ♏ xx, three times a day, and in four days said his throat was perfectly well.

CASE III.—Kate D. was admitted in an advanced stage of phthisis, complaining of great thirst, parched mouth and throat, and pain on swallowing. She was put on ex. ergot. fl., ♏ xx, three times a day, and in four days the pain on deglutition had disappeared, and the dryness was much less marked.

CASE IV.—Male, aged 34, with a slight tubercular involvement of the left apex. The patient complained of sore throat. An examination was made, which showed the mucous membrane very much congested and two small ulcers. Local treatment was tried for nearly a week, but without avail. He was then put on ʒss of ergot three times a day, and in about eight days the throat was so much better that the patient asked for his discharge.

CASE V.—Michael D. An advanced case of phthisis. He complained of sore throat, and great dryness of mouth and throat. Local remedies were tried for several days, but the throat continued to grow worse. He was finally put on ergot, ♏ xx, three times a day, and in four days he could swallow without pain, and the dryness had almost disappeared.

CASE VI.—Bridget M. was admitted with a moderate tubercular involvement of both lungs. She complained of a constant dry throat and burning pain; no ulcers were seen on examination. The patient was put on ex. ergot. fl., ♏ xx, three times a day, but at end of three days there was little or no improvement; the dose was then increased to ʒss, but with no better results. Finally, she was given ♏xl. In a few days a slight improvement was noticed, but she continued to suffer from her throat for about ten days.

There have been three other cases, similar to Case II, and in from three to five days after the exhibition of ergot in twenty minim doses, three times a day, they declared that their throats were perfectly well.

With the exception of Case IV, all the patients were in an advanced stage of phthisis. Cases I and IV were the only ones in which ulceration was present. One of my colleagues has had three cases without ulceration, and all responded promptly to this treatment.

Remarks by Dr. Hughes.—The cases were all of them pretty well-marked ones, and the relief after treatment, in all but one case, unquestionable. Before the exhibition of the ergot in most of them other methods of treatment had been tried with unsatisfactory results. After cessation of treatment the symptoms had a tendency to recur, but another exhibition of ergot again alleviated them. However, with each recurrence the results of treatment seemed to be rather less pronounced, so that it is possible that in time it would be of no avail; though one case has been under observation for more than two months, and the treatment continues efficacious. The effect upon the fauces when there was much congestion was very apparent, in a few days the congestion almost entirely disappearing.

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PENNSYLVANIA HOSPITAL.

I.—STAB WOUND OF THE CHEST PENETRATING INTO THE PERICARDIUM.

[Service of Dr. JOHN ASHHURST.]

J. S., colored, aged 29, was admitted in the lower surgical ward of the Pennsylvania Hospital, June 14th, 1890, with the history of having been stabbed with a large, double-edged knife during a quarrel.

On admission, temperature normal; pulse, 56; respiration normal. There was a stab wound of the chest three-quarters of an inch long between the eighth and ninth ribs on the left side, one inch outside nipple line. A probe passed into this wound went upward, inward and backward through the lung and rested on the apex of the heart. The probe entered a little more than six inches. In placing the finger within the wound the apex of the heart could be distinctly outlined; its action was very slow, strong and regular. On auscultation over the heart there was a peculiar, crackling murmur to be heard. There had been very little bleeding, and no escape of pericardial fluid was noticed.

The wound was sutured and dressed with iodoform and collodion, and the left half of the chest strapped. He was placed upon Dover's powder, two grains, calomel, one-sixth grain, every second hour.

By midnight his temperature had risen to 100 2-5°; respiration, 36; pulse, 84, and he was complaining of some little pain over the region of the heart. He was given a dose of morphia hypodermically and slept the remainder of the night.

On the 15th, the temperature was 100°; respiration, 26; pulse, 64; the man was resting quietly and was very anxious to go out. There was no pain in the chest.

On the 17th the temperature was normal; respiration, 20; pulse, 56. There was no pain, no cough. On the 23d the wound was dressed and found healed. Temperature, pulse and respiration were normal. Patient discharged at his own request.

II.—TWO CASES OF ACUTE TRAUMATIC TETANUS.

CASE I.—A T., aged 13, was admitted to the lower surgical ward of Pennsylvania Hospital, June 6th, 1890.

While playing in a graveyard he received a crush of the soft parts of the right foot by a tombstone falling on it.

On admission the sole of the foot was split on both sides parallel to the metatarsal bones, and the cellular tissue was severely lacerated. The wound was thoroughly cleansed with bichloride solution, the edges brought together loosely by adhesive plaster, and the foot

put in an antiseptic dressing. The child was placed in bed on a light diet. For five days he did well, resting quietly, with slightly elevated temperature and accelerated pulse.

On the morning of the fifth day, when attempting to eat his breakfast, he noticed that his jaw was stiff, and that swallowing was extremely difficult. He was seen shortly afterward, at which time his jaws were completely locked, with great prominence of both masseter muscles and slight retraction of the head. The temperature at this time was 100°; pulse, 98; respiration, 20. An attempt to administer chloral and bromide brought on a mild convulsion, which lasted for several minutes. He was then given hypodermically one-quarter grain of the extract of physostigma, to be repeated in half an hour.

One hour later the contraction of the muscles had subsided sufficiently to enable him to take fluid extract of physostigma, five minims, with chloral, grains ten, every two hours for the remainder of the day. The dressing on the foot being removed, the sole was found sloughing and the little toe gangrenous. All the dead parts were removed and the wound was dressed with a charcoal poultice containing pulverized opium, thirty grains to the ounce.

During the day he rested fairly well. Risus sardonicus developed by noon, and by 5 in the afternoon he had the first severe tetanic convulsion, with marked opisthotonus. At 11 P. M. he had another convulsion, and from then on until death, which occurred just twenty-five hours after the first symptom developed, the convulsions were almost constant. The temperature had been rising gradually all day, until it reached 109° in the axilla at death.

Post-mortem examination, which was made by Dr. Henry M. Fisher, six hours after death, showed the meninges of the brain and spinal cord intensely congested; otherwise, the organs were normal. Samples were preserved for microscopical and bacteriological examination.

CASE II.—P. M., aged 23, was admitted to the lower surgical ward of Pennsylvania Hospital, with a cystic sarcocele of the right testicle and a ganglion of the right wrist. Both tumors were removed, the former by means of the écraseur, and the latter by dissection under strict antiseptic precautions. The patient did remarkably well until the tenth day after the operation, when, in attempting to eat his breakfast, he noticed that his jaw was stiff, and it was with great difficulty that he could masticate his food.

When seen, a short time later, his pulse was 68; temperature 98°; respirations 22. The patient was apparently well, but with a slight degree of risus sardonicus present and some prominence of the masseter muscles, with total inability to separate the teeth. He was given extract of physostigma, one-quarter grain, hypodermically, followed by chloral, twenty grains, and fluid extract of physostigma, ten minims, every second hour.

Both wounds were opened and found in good condition, and were redressed with charcoal and opium poultices. The patient slept the greater part of the day comfortably.

On the 23d the temperature was 102 2-5°; pulse 116; respirations 18. He was thoroughly under the influence of chloral, and slept quietly. The bowels were well opened with an enema, and the urine was passed without difficulty.

The risus sardonicus was very marked, and saliva dribbled from the mouth. During the afternoon he had two convulsions, which were accompanied by pleurothotonus.

On the 24th he was much worse. Convulsions were frequent, and were produced by the slightest touch; in each the whole body was arched to the side, usually to the left.

Patient sank rapidly during the night.

An observation to see whether the temperature rose after death was made in this case, which demonstrated the fact that it rose $2\frac{3}{5}°$, or from 105° at death to $107\frac{3}{5}°$ forty minutes after death.

No post-mortem examination was allowed.

III.—INGUINAL ABSCESS RESEMBLING HERNIA.

L. C., aged 40, married, was admitted to the women's surgical ward of the Pennsylvania Hospital on June 16th, 1890, with the following history:

One week ago she fell, striking her left hip. She noticed no inconvenience at the time, and continued about her work as usual. She says that, three days later, a tumor suddenly

appeared below Poupart's ligament, on the left side, which was tender and very painful, and increased rapidly in size. The seventh day after the fall she had a chill, followed by fever and sweat, with considerable vomiting and retching. The bowels were at first constipated, afterward they became very loose. Complete loss of appetite.

On admission, there was a hard, firm tumor just below Poupart's ligament, on the left side. There was no fluctuation, and no impulse on coughing. Percussion sound was flat. The vomiting and diarrhœa continued, the vomited matter being mucus—at no time fecal. The abdomen was slightly distended, and tender about the lower left iliac region. The tongue was heavily coated, dryish and tremulous.

Temperature on admission, 102°; pulse 116, respirations 26, thoracic in character. The patient was etherized. Dr. Ashhurst cut down and found a large abscess, which was bound above by Poupart's ligament, and dissected up the muscles for a considerable area. The contents were evacuated, and the cavity thoroughly washed out with bichloride of mercury solution and dressed antiseptically. The abscess cavity rapidly filled in, and the patient was discharged cured.

IV.—COMPLETE PROLAPSE OF THE RECTUM (ACUTE).

S. P., aged 41, a laborer, was admitted to the lower surgical ward of the Pennsylvania Hospital June 23d, 1890, with the following history:

He had always enjoyed good health, and was a well-built, muscular man. Bowels were always regular. Had never had any sickness or venereal disease. While lifting a heavy box, he suddenly felt something give way about the rectum. He stopped work during the day, and applied for admission to the hospital.

On admission, temperature was normal; general condition was good, except that he was slightly under the influence of alcohol. On examination, the whole of rectum was found to be invaginated and protruding about five inches. It was much discolored, and appeared strangulated; was swollen, but smooth. The internal sphincter could just be reached with finger, and was very much dilated.

The mass was easily reduced by manipulation, and a suppository of tannic acid and opium was given. The next morning his condition was good, bowels were moved and the rectum in proper position. The man states that he had never had anything of the kind before, and was at his usual occupation when the accident happened.

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ACUTE ENDOCARDITIS.

[Service of Dr. MORRIS LONGSTRETH.]

L. A., aged 19, white, single, was admitted to the Pennsylvania Hospital March 21st, 1890.

Family history negative; personal history: always had been well until a month ago, when she had a chill. At this time she was living in Camden; since she has been a hard worker. At the time of the chill she had general pain, and a few days later this was localized in the joints and back. Later the pains attacked the back of the left thigh in the course of the sciatic nerve, and she noticed that she was short of breath and at times was unable to get up stairs.

In a week pain appeared in the left chest, of a dull character, and at the same time cough developed, but no expectoration. At night she sweated considerably. She lost weight

fast, appetite was poor, and the jaw, she noticed, was stiff. The general appearance was typhoid in character, the tongue red and dry, the pharynx a little inflamed, but no pain on swallowing.

Lungs.—The left apex was dull on percussion; fremitus increased; vocal resonance increased and a large number of harsh and a few mucous râles were heard.

Heart.—The impulse was normal, the apex beat normal in position, and a double murmur audible, both an aortic and a mitral systolic.

Liver was negative. *Spleen* enlarged and sore on pressure. There was pain in the left hip shooting down the course of the sciatic nerve. A bed sore developed on the right buttock.

A short time after admission she had a chill, when the temperature went up to 104°; she was sponged, with resulting fall of temperature. The urine was dark in color; acid reaction; sp. gr. 1028; no albumin or casts.

The treatment was rest in bed, milk diet, ammonium muriate, grains v, every second hour, half ounce of whiskey every fourth hour, blister down course of the sciatic nerve. The bed sore was dressed in the usual antiseptic way.

The chills continued daily, sometimes twice a day, and the temperature rose as high as 105 4-5°. During these chills she would have universal pain.

On the 24th, she had much sharp pain in left side in region of the heart. The bowels were moved by an enema; she was then ordered calomel, grain one-sixth, bicarbonate of soda, grains five, every two hours until one grain of calomel was taken. In the evening her temperature rose to 105 3-5°, when she was sponged, with reduction of the temperature.

On the 26th she was not so well, pulse weak and rapid; bed sore improved. She had another chill; the temperature rose to 105°; she was sponged with no effect, and in an hour was sponged again without effect. She was then given five grains of phenacetin, which reduced temperature to 97 4-5°.

The heart murmurs at this time were very loud and rough, were heard all over the chest, and a distinct thrill could be felt. Pain continued over the region of the heart; the pulse was irregular and very rapid.

On the 27th, large doses of quinine were exhibited, with no effect. The blood was then examined, with negative results.

On the 29th, the temperature rose to 105°, after a severe chill. Sponging again failed to reduce it, but phenacetin, grains v, lowered it to 94 4-5°, causing profuse sweating and a very weak pulse, Atropia, grain 1-120, was given hypodermically, and half an ounce of whiskey. These measures and hot water bottles checked the sweating, and the temperature became normal. The pain along the course of the sciatic nerve disappeared, leaving only a slight soreness.

On the 31st she complained of severe cough, and examination of the lungs showed that the percussion note posteriorly at both bases was dull; crackling râles were heard all over; expectoration was free.

On the 3d of April her condition was about the same. Chills continued daily, sometimes twice a day; temperature rose to 105 1-5°. Phenacetin in small doses was administered, which reduced it gradually with no bad results. A short time after the chill, she noticed she was paralyzed in the left arm, and her pulse was very quick and irregular. The urine was again examined with the same result as before, except that pus and blood were found, but no casts. All former treatment was stopped, and she was ordered iodide of sodium, grains v, acetate of sodium, grains xv, tincture of digitalis, minims x, tincture of belladonna, minims x, to be given every fourth hour.

On the 6th, the heart was examined with the same results as before She had a chill, the temperature rising to 105°. The bowels were constipated and a laxative pill was ordered three times a day. The cough had cleared up and the condition was improved.

On the 14th she was much better, the chills having ceased. The pulse was stronger and appetite had returned. Her heart was examined, and the murmurs were found to be less distinct.

On the 17th, all the former medicine was stopped except the laxative pill, and she was ordered compound tincture of gentian, two drachms twice daily. The heart was again exam-

ined and a very marked change noted, the murmurs having become very much softer, and the action more regular.

On May 6th, she was feeling much better, and began sitting up. Her lungs had cleared up; she had no pain. The shortness of breath had all disappeared. The heart's action was regular and the murmurs very soft, but they still persisted over both aortic and mitral areas.

On the 31st she felt so much better that she desired to go home.

The interesting points during the height of the disease were the severity of the chills, which occurred daily, and often twice daily; the good result of small doses of phenacetin (grs. 1¼); the sudden loss of power in the left arm with so rapid a recovery; and the change in character of the murmurs as she improved.

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EDITORIAL.

A NEW TREATMENT OF CHRONIC TRACHOMA.

THE various types of granular lids constantly crop up as stumbling blocks in the therapeutic pathway of the practising ophthalmic surgeon. This disease, the very nature of which has not been positively determined and whose histology is still a matter of dispute, has called forth some of the best work of ophthalmologists, and yet progress in the solution of the many difficulties in regard to etiology and therapeusis which surround it is well-nigh as chronic as the disease itself. It was for this reason, perhaps, that in the recent International Medical Congress it was deemed advisable to devote an entire session of the Section of Ophthalmology to its consideration, and elaborate opinions were delivered upon racial influence in the development of trachoma and the comparative immunity of certain races, the geographical distribution of the disease and the influence of altitude upon the development of the follicles, together with demonstrations of its histology, and speculations in regard to its essential etiology. Whatever classification is adopted, and whatever view entertained in regard to its nature, the most interesting point to the practical ophthalmic

surgeon is the best means of dealing with this most stubborn affection of the conjunctival membrane.

Under the caption of the present note, Mr. George Lindsay Johnson (*Archives of Ophthalmology*, July, 1890), contributes a treatment which in his hands has met with reasonable success in a large number of cases of chronic and subacute trachoma. It should be distinctly understood that the method about to be detailed has to do only with chronic and subacute trachoma, and not at all with the acute variety of the disease. The types of the disorder which are benefited by this method are the papillary or epithelial forms, in which the swollen follicles are hidden by hypertrophied conjunctival papillæ, the follicular variety, sometimes termed granular, in which the follicle is the chief characteristic, and finally the mixed type, consisting of a combination of the first and second forms. The disease, following a classification originally proposed by Raehlmann, passes through three stages, in the first of which proliferation of the follicles and pannus appear; in the second, degeneration of the follicles, ulcers and the formation of granulation tissue; in the third, the development of scar tissue and the natural termination of the disease. In the first of these stages Mr. Johnson thinks therapeutic measures are of the most avail. He deprecates the use of the standard astringent preparations, on account of their failure to penetrate to a sufficient depth, while he believes that the heroic treatment of the galvano-cautery leads to such contracting scars as to present a remedy more unfortunate in its results than the disease itself. His method is as follows:

The patient is anæsthetized, the lid everted over a vulcanite spatula, and the conjunctiva put upon the stretch by means of a double hook. With a three-bladed scalpel containing an adjustable guard, a series of grooves is made parallel to the edge of the lid and following each other in regular succession toward the retrotarsal fold. The blood is mopped away by means of tufts of absorbent cotton dipped in a solution of boracic acid or hydronaphthol. This portion of the operation being completed, an electrolizer connected with a Stöhrer's battery, four to six cells being in operation, and consisting essentially of two platinum blades, is drawn firmly through all the grooves in turn from one end of the lid to the other. If a good result is being obtained a foamy cream arises around the blade of the instrument. If the current is too strong the lid becomes of an ashy brown color, indicating unnecessary cauterizing action. The lids now being thoroughly cleansed are sprinkled with a solution of cocaine, dusted over with calomel, and finally smeared with an ointment of vaseline and hydronaphthol, 1 to 800. Undue inflammatory action calls for the use of iced compresses. For two days after this operation there is considerable discharge and swelling. Usually on the third day healing sets in, and by the end of the week, provided the current has not been too strong, the wounds are nearly healed. The subsequent treatment of the case consists in using a hot boracic acid lotion and the hydronaphthol ointment.

In the opinion of the author it is not necessary that the patients should remain in bed, but he dwells particularly upon the importance of the selection of the proper case for such method, the care that should be taken not to touch

the cornea during the operation, the importance of employing a current of suitable strength, and the advisability of using supporting constitutional treatment. Mr. Johnson's experience includes operation upon nearly one hundred cases, and with the exception of two the results were uniformly good. In these two the variety was trachoma folliculare ; in all of the others either trachoma mixtum, or papillare.

PYOCTANIN.

SURGEONS are generally willing to grant that the ideal antiseptic, one that is non-toxic and non-irritant to the human protoplasm, and yet which is deadly to germs, is still to be discovered.

Lately, pyoctanin, or aniline violet, has been advanced as the perfect antiseptic, and its claims have been supported by a long series of elaborate and apparently carefully conducted experiments, together with extensive clinical observations. It is stated that this drug is an antagonist and absolute destroyer of all micro-organisms which by their presence complicate the course of operative wounds. Even when infection has taken place, an application of the drug immediately renders the parts sterile by acting directly upon germs, both general and local effects upon the patient being practically *nil.*

Kessler (*New York Medical Record*, July 5th, 1890), claims that pyoctanin is the ideal antiseptic and pus destroyer, that suppurative wounds and indolent ulcers of long standing rapidly improve after a few applications of the remedy, and that intractable ulcers that have for months and years defied all treatment, assume in a short time conditions most favorable to granulation and cicitrization.

Stilling is equally enthusiastic in his praise of the drug. Ehrlich and Leppman (*Deut. med. Woch.*, No. 23), claim for hypodermic injections of this medicament distinct analgesic effects, particularly in neuralgias and rheumatic affections of the muscles and joints. Where pain is due to inflammatory swelling no distinct effect results from injections.

Petersen (*Wratsch*, No. 20), finds that pyoctanin is as efficacious as iodoform, and that it possesses the advantage over this latter drug of being without odor.

In cases of chancroidal and syphilitic ulcerations, excellent results follow its application in the form of a powder, 2-1000, or solution, 1-1000. Braunschweig (*Fortschr. Med.*, No. 22), confirms Stilling's statement that pyoctanin is practically without toxic effects as far as general symptoms are concerned. At times local pain and congestion, however, are noted, showing that the drug is not entirely without irritant action.

Fessler, as the result of laboratory experiments, reports that the micro-

organisms of pus are destroyed by fifteen minutes' exposure to a solution of 1-1000 aniline violet.

In contrast with this evidence Garré (*Münchener med. Woch.*, No. 25, 1890), as a result of clinical trial, obtained practically no better results from pyoctanin than from any one of a number of well-known antiseptic substances. While granting that it is entirely without poisonous properties, he believes it possesses no specific pyogenic influence. In the same paper Troje reports the results of a series of careful laboratory experiments. He coincides entirely with Garré in believing that methyl violet, or pyoctanin, in the solution of 1-1000, is not superior to other antiseptics. He finds that it exercises a decided inhibitory effect upon germ growth, but that even after twelve hours' action the micro-organisms of pus are not certainly devitalized.

He further examined pus of ulcerations treated by pyoctanin, and succeeded in getting innumerable colonies of staphylococci to develop upon gelatin. These were proven by injection experiments to preserve all their virulent qualities.

With this contradictory evidence before us, it is difficult to decide as to the true value of the drug. The fact that it is not possessed of toxic properties, and that it exercises a decided antiseptic action, seems to be generally conceded.

The point of controversy seems to be as to the relative power of this drug when compared with bichloride, carbolic acid or others of the more powerful antiseptics. It would seem that with these pyoctanin cannot fairly rank.

Against this is to be balanced the fact that it is not poisonous. This claim cannot be advanced for any of our more powerful germicides, and is of so great importance that it would justify the use of a drug far less potent to destroy germ life, should it be proved that such drug is possessed of sufficient antiseptic powers to answer the requirements of ordinary surgical practice.

The true value of pyoctanin must be determined before the tribunal of medical opinion, and the final judgment delivered upon its merits will be the result of experimental and clinical work, not on the part of one or two observers, but by the hundreds of careful clinicians whom the medical profession regards as its leaders.

It is almost certainly true that the enthusiastic claims made for pyoctanin by those who have written in its favor will not be sustained. It is possible that this drug will be as little used as are many others but recently launched into the world with no less extravagant praise, now scarcely known by name. It is possible, however, that pyoctanin may take a prominent place in the surgical armamentarium, and it is right and proper that each should contribute his part in deciding the fate of the drug by personally investigating its merits.

SURGICAL TREATMENT OF EPILEPSY.

In deciding as to the effect of surgical treatment in this malady, a distinction must be drawn between relief and cure, and the circumstance that any operative procedure attended by severe shock may materially modify the severity of symptoms, has undoubtedly been an important factor in producing reported cures; cures which, if the subsequent course of the case had been observed, would have been found to exhibit only a temporary amelioration of symptoms. Probably every one is familiar with such cases. If the success of operative procedure is calculated from statistics gathered from journal reports, it is extraordinarily large.

Probably no one doubts but that gross lesions affecting the motor areas and producing the so-called "Jacksonian" epilepsy may be relieved by operation, and in this case the *modus operandi* is exceedingly simple and comprehensible. Even in cases of definite peripheral irritation giving rise to cerebral symptoms it is comprehensible that the operation relieving such irritation may guard against the recurrence of the convulsion. Thus the excision of scar tissue has many times effected lasting cures, while the beneficial effects of circumcision and other minor operations for the relief of local irritation are generally acknowledged.

Dr. Wood (*Western Medical Reporter*, July, 1890), gives an interesting *résumé* of the many surgical means which have from time to time been employed for the cure of epilepsy.

Of the various operative procedures which have at one time or another been commended, may be mentioned phlebotomy, ligature of the carotids, ligature of the vertebral arteries, tracheotomy, trephining, circumcision, castration, removal of the ovaries, removal of the clitoris, nerve stretching, and tenotomy of the ocular muscles. Hare ("Epilepsy, its Pathology and Treatment"), in the discussion of operations for the relief of possible peripheral irritation, writes as follows: "Like every other measure of relief, it is probable that a greater usefulness was claimed for it than was deserved, and probably many persons are lacking foreskins, ovaries or clitoris by reason of the search for peripheral enemies of the health."

As a curious fact, brilliant successes are recorded as resulting from all these operations, even when the parts operated upon were healthy, and there was no good reason to suspect that they were pregnant sources of reflex irritation.

In contrast to the surgical operations directed to the cure of epilepsy, is the long series of cases by which active counter-irritation by means of setons or issues, or by means of accidental wounds or burns, has also resulted in great amelioration in the severity of the disease. It would seem that in cases of idiopathic epilepsy any severe operation may modify the severity of the attack, or, if certain recorded cases can be believed, may permanently cure the disease.

The curative effect of operations *per se* is one which has been seen by every surgeon, and one which we are bound to believe exercises a most powerful influence.

If this doctrine be accepted, it would seem far better to perform operations which in themselves do not seriously endanger life, and since counter-irritation, especially when applied about the base of the skull, has been followed by many excellent results, it would seem desirable to so locate the seat of operation that, together with the mental and nervous effect, might be associated the derivative influence resulting from the local inflammation.

Of course, when gross lesions or distinct foci of irritation are present, these imperatively demand surgical attention, but in the absence of these an operation such as that of castration or oöphorectomy, performed solely for systemic effect, would seem to be entirely unjustifiable, since less severe procedures may advantageously take its place.

LITHOTRITY IN CHILDREN.

THE favor with which the operation of litholapaxy was originally received by the profession seems to have steadily extended, until at the present day the cutting operation bids fair to practically fall into disuse.

All are in accord with the belief that in the adult, when litholapaxy is applicable, that is, when the stone is not too large or too hard, and when the bladder and urethra are in a fairly healthy condition, the crushing and evacuation operation is attended with less risk to the patient than any of the procedures by which the stone is removed through an opening made by the knife.

In children, lithotomy has held its own, chiefly because, in them, the results have been perfectly satisfactory ; partly because the smallness of the infantile urethra greatly complicates the crushing operation. Latterly, however, many favorable reports have been published concerning the satisfactory results of lithotrity in children. It is claimed that the perineal operations are frequently followed by sterility, a claim supported by reports of a few cases, that the knife operation is dangerous to life, and that any cutting operation is needlessly severe when simple crushing can take its place. Against lithotrity in children the main argument to be advanced is that it is practically impossible to pass evacuating catheters of any sufficient size, hence it is customary to simply crush the stone, and to allow the fragments to be passed spontaneously. The narrow urethra here seriously complicates the case. To have any prospect of passing, the fragments must be exceedingly small. If the stone is originally small, to reduce it to a powder need not necessarily take a great deal of time ; but when the stone is large and hard, hours may be required before an amount of crushing sufficient to allow the fragments to pass has been accomplished. Again, the suffering attendant upon the passage of these fragments is very great. In the current number of the UNIVERSITY MEDICAL MAGAZINE is reported a case in which

this constituted such a marked complication in the after treatment of a case of lithotrity that lithotomy was performed. Lithotrity might be indicated in young children when the stone is small, accessible and comparatively soft. Since in many cases these three conditions are fulfilled, crushing should rank as an operation meriting careful consideration. Where the stone is above a quarter of an inch in its largest diameter, and is hard, a suprapubic operation is indicated, with tight suture of the bladder opening at the close of the operation, and tamponing of the parietal wound.

MOTOR PARALYSIS FROM THE HYPODERMIC INJECTION OF ETHER.

ETHER takes a high rank among the diffusible stimulants, and is frequently employed by surgeons and physicians in cases of sudden collapse and syncope. As an offset to the advantages which accrue from the use of the drug by the hypodermic method, is the fact that when it is injected into the loose cellular tissue directly beneath the skin emphysema of the surrounding parts is likely to take place, while if the needle is inserted more deeply into the belly of the muscle severe pain, and sometimes abscess, follow the operation. In the hurry to restore a collapsed patient these accidents are of minor importance, and, as ether is usually at hand, and its action is rapid, the drug is constantly administered subcutaneously without much thought whether untoward after-effects will follow its use, especially as these effects are insignificant in comparison with the necessity of restoring a flagging circulation.

The fact that a more permanent injury to the part into which the ether is injected may follow than that of emphysema or abscess is not generally known, and indeed the cases of motor paralysis which have occurred as sequelæ are extremely rare. David Wallace (*Edinburgh Medical Journal*, September, 1890), reports two interesting cases of this character. In one a suddenly collapsed patient received a hypodermic injection of twenty minims of sulphuric ether into the extensor aspect of the left forearm at the junction of the lower and middle thirds. The next day it was found that all the muscles supplied by the posterior interosseous nerve were completely paralyzed. In the second case twenty minims of ether were injected into the back of the forearm, and on the following day a paralysis of the same group of muscles as in the first case was discovered. Nine weeks after the occurrence of the paralysis Case II had partially regained the use of his hand, and voluntary power in the affected muscles was gradually returning. The course of treatment employed in Case I was the following: During the first week, owing to the feeble condition of the man, the hand was simply placed in a comfortable position. At the end of this time massage was begun and continued for one week without improvement. Blisters over the course of the posterior interosseous nerve were futile in result, and

faradism failed to contract the muscles. Galvanism was then systematically employed and resulted in a gradual improvement of the condition, together with increasing strength of the muscles.

Wallace, in searching the literature for similar cases, has found only four, reported by Arnozan, in which a paralysis occurred in muscles near the spot where injections of ether had been inserted. As an explanation of these phenomena, he rejects the idea that the needle could have pierced the nerve, owing to the fact that it is situated too far away from the point at which the needle was introduced, while the possibility of an abnormal distribution of the nerve in two cases is hardly worthy of consideration. He is disinclined to believe that the ether used was a bad preparation and had a neurolytic or local toxic action. He tested his ether and found it to be a good article. He accepts the explanation that after the injection there was rapid diffusion of the ether through the intermuscular spaces where it came in contact with the nerve branches, causing coagulation and destruction of their constituents. The pain which his patient experienced during the early stage of the process indicated the presence of a neuritis, while the immediate local effect was probably a degeneration of the nerve going to a higher level. This explanation seems to rest, to a certain extent, upon experimental work, as Brunton has found that when either ether or alcohol is applied to the exposed sciatic nerve of a frog conductivity is destroyed before irritability, and "stimulation applied to the nerve further away from the muscle than the part acted on by the ether gave no effect, while when applied nearer the muscle than the part affected by the ether there was contraction of the muscle."

That hypodermic injections of ether may cause an aggravated neuritis is well exemplified by the interesting case reported by Dr. Caspar W. Sharples (UNIVERSITY MEDICAL MAGAZINE, Vol. I, p. 689). His patient, a woman under the care of Dr. Sinkler in the Infirmary for Nervous Diseases, was given a hypodermic injection of ether on the ulnar surface of the left forearm. In eighteen hours great swelling occurred, and later tingling in the entire distribution of the ulnar nerve, semiflexion of the ring and little fingers, retardation of the growth of nails, and the development of a glossy skin. Lead-water and laudanum, rest, and blisters over the brachial plexus and along the course of the nerve were followed by good results.

Wallace concludes, and in this conclusion is in accord with Arnozan, that the prognosis of muscular paralysis following injections of ether is on the whole favorable, although recovery may be long delayed, and that galvanism is the best method to hasten the cure.

BOOK NOTICES.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. EDITED BY CHARLES E. SAJOUS, M.D. F. A. Davis: Philadelphia, Chicago, Atlanta and London, 1890.

The five volumes of the Annual are, to the physician who makes a conscientious effort to keep abreast with his times, probably the most valuable books which he will receive in the course of the year. Gleaned as they are, from the world's medical literature, each department by men peculiarly fitted for their special work, they give the physician what otherwise would be absolutely impossible for him to obtain. It is difficult to understand how anyone is willing to be without these valuable books. Economy in this direction seems as poor policy as stinting in proper apparatus or appliances.

The volumes offered to the profession this year are no less ably prepared than in former years.

The first volume opens with an article upon diseases of the lungs and pleura, by Prof. James T. Whittaker, of Cincinnati. The well-known articles of Cornet and Bollinger receive the principal share of credit in the year's work, and from the vast mass of literature upon this subject a most able summary has been made.

The article upon diseases of the mouth, stomach, pancreas and liver, by Prof. Shattuck, of Boston, will also excite attention from the excellent way in which the material has been condensed. Diseases of the intestines and peritoneum are treated with a similar comprehensiveness and brevity.

The article upon animal parasites and their effects, is by Profs. Leidy and Dolley, names which are in themselves assurances of scientific accuracy and completeness.

The chapter upon diseases of the kidney, bladder and supra-renal capsules, by Prof. Tyson and Dr. Smith, together with the articles upon fevers, by Dr. Wilson and S. Solis-Cohen, are perhaps the most exhaustive of this volume, if we except the last section upon syphilis, by Prof. J. William White. This author has with his peculiar skill, and with a style admirable for completeness, given in comparatively few pages a most able review of the advanced work in this important disease.

In the second volume, diseases of the brain, by Dr. Landon Carter Gray; diseases of the blood and spleen, by Prof. Frederick P. Henry; and dietetics of infancy and childhood, by Drs. Starr and Powell, are particularly to be commended. Dr. Gray's article is a most valuable monograph upon the advances in brain physiology and pathology. The progress in neurology is so rapid that it is absolutely impossible for any but the specialists to preserve even the general drift of modern writings on this subject, hence the entire section devoted to nervous diseases is of special value.

The third volume is devoted to surgical subjects, and is on the whole somewhat disappointing. Subscribers to the Annual will miss the brilliant exposition of Senn upon surgery of the brain and nerves, though the summarising of progress in this department has been conscientiously done.

Kelsey's section upon diseases of the rectum and anus is especially noteworthy.

The surgical diseases of the genito-urinary apparatus in the male, by Keyes, is also a most excellent section.

Orthopedic surgery, by Prof. Sayre; fractures and dislocations, by Prof. Stimson; and tumors, by Drs. Longstreth and Penrose, are all articles of very great merit.

The fourth volume is probably the most valuable of the series. The sections which are particularly to be commended, are those upon diseases of the skin and syphilis, by Dr. Van Harlingen; ophthalmology, by Drs. Oliver and Gould; diseases of the nose and accessory cavities, by Dr. Sajous; diseases of the larynx, trachea, and œsophagus, by Dr. J. Solis-Cohen; diseases of the thyroid gland, by Drs. Hooper and Clark; urinalysis, by Dr. Allen J. Smith; and bacteriology, by Dr. Harold C. Ernst. As in the last year's Annual, Dr. Oliver has given a *résumé* of his subject which is simply beyond criticism. Dr. J. Solis-Cohen is universally recognized as the father of laryngology. The striking and original style which has aided in making his works popular in many countries is not wanting in this thoroughly scientific abstract.

In the fifth volume the chapter upon general therapeutics, by Dr. J. P. Crozer Griffith; and upon experimental therapeutics, by Dr. H. A. Hare, are each most valuable and exhaustive. Dr. Griffith's section is characterized by the minute care and accuracy which is a feature of all his writings. Dr. Hare's section is one of exceptional brilliancy, and to the practitioner of medicine one of the most directly useful articles to be found in the entire series. These two articles easily take the palm in the last volume.

It is perhaps easy for anyone to criticize this work for certain omissions, omissions which may seem to the critic of paramount importance; but it must be remembered that what to one is important to another is not so, that it is impossible to include everything, and that the summaries are written for the greatest good of the greatest number, and by men who are eminently fitted to decide as to this point.

We can commend the Annual not only as a useful, but a necessary part of every physician's library.

A Treatise on Rheumatism and Rheumatoid Arthritis. By Archibald E. Goddard, M.A., M.D., Oxon. Philadelphia: P. Blakiston, Son & Co., 1890.

Dr. Goddard's work is a step in the right direction, in that he endeavors, as he states in his preface, to limit the "words 'Rheumatism' and 'Rheumatic,' which are often so loosely employed that they have almost forfeited all claim to be regarded as scientific terms, to one definite set of phenomena." This is as it should be, for undoubtedly the average practitioner applies "rheumatism" to all manner of aches and pains. In Chapter II he states that he takes acute articular rheumatism as the typical rheumatic affection, and refuses to recognize as rheumatic any morbid conditions which are not occasionally met in direct association with it. He considers endocarditis as frequently the only manifestation of the rheumatic attack, and on the other hand grudgingly admits lumbago as a rheumatic affection.

Chapters III and IV give an excellent review of the different theories of the pathology of rheumatism. The author allows the reader to draw his own conclusions as to the theory to be accepted. This is perhaps wise, but it gives the reader a certain sense of disappointment.

Chapter VII is devoted to a discussion of the typical attack of articular rheumatism, and he must be hypercritical who is not satisfied with the description.

Chapter VIII, to the reviewer's mind, is the most important of all. It deals with rheumatism of childhood. So often are the attacks of rheumatism in children overlooked by the hurried practitioner, that untold injury is done to the patient. The attacks are so frequently atypical, and give rise to so little general disturbance that both parents and physician frequently pass them by unnoticed. A careful perusal of this chapter will go far to make the doctor exact in his examination of children with "growing pains," and to give rest to the heart, which so frequently is affected.

Chapters XII and XIII deal with rheumatic affections of the nervous system. The peculiar condition of rheumatic hyperpyrexia is fully treated, and considered to be due to the action of the rheumatic poison on the higher nervous centres. Chorea in its relation to rheumatism is fully discussed, and the author arrives at the conclusion that, though chorea may arise from other causes, in the vast majority of cases it is due to the action of the rheumatic poison.

Chapter XVII treats of the subcutaneous nodules which the author, with good reason, considers *the* pathognomonic rheumatic lesion.

The chapters on treatment, though not giving anything especially new, are excellent. The rules for the general treatment are good, and the review of the older methods of treatment will furnish points for the management of cases which do not respond to the modern treatment by salicylic acid. The treatment by this latter drug and its compounds is fully gone over, and it is justly given the preference, though the hope is expressed that a still better plan will be forthcoming. Salicylate of sodium is lauded above all other preparations. To the minds of many readers, salol is not estimated at its true value. The expressed objections to it are its insolubility, its power of producing carboluria, and its inferiority as an analgesic. The reviewer would submit that its insolubility is rather an advantage; it can be given in compressed pill, capsule, or powder; and so far as his rather extended experience with the drug is concerned, it will never produce gastric irritation. The possibility of producing carboluria does not seem to constitute a serious objection, and salol certainly eases the pain as well as any other compound. The treatment of chronic rheumatism might be extended to the supporting treatment by cod liver oil, iron and arsenic, as suggested for rheumatoid arthritis. Certainly typical cases of chronic rheumatism are cured by the proper use of this method.

The plan of discussing rheumatism and rheumatoid arthritis in the same volume is a good one. The points of distinction and resemblance can be the better drawn. Of especial value are the paragraphs which forcibly insist upon persistence in the treatment recommended, with the hope of preventing further advance of the disease. The volume ends with a complete bibliography and an excellent index.

The publishers are to be complimented on the beautiful and substantial manner in which they have dressed the volume.

Essentials of Diseases of the Eye, Nose and Throat. By Edward Jackson, A.M., M.D., and E. Baldwin Gleason, S.B., M.D. Philadelphia: W. B. Saunders, 1890.

This, the latest addition to Saunders' Question Compends, deserves the same degree of praise that has been accorded the earlier numbers of this excellent series of manuals. Criticism of these little books that are announced as being chiefly designed to economize the time and labor of the student, is necessarily restricted by the modesty of their aim. In taking up the consideration of the different specialties, however, and giving in this condensed form a description of the principles underlying each, with the actual essentials of

knowledge that their practice would require, a work such as this becomes of value not alone to the student, but to the hurried physician as well. Sufficient information concerning the methods of examining the eye, throat and nose, with full directions as to the diagnosis and treatment of their diseases, is given in this book, to enable the general practitioner to manage intelligently and successfully many of the cases that will seek his aid.

Part I, Essentials of Refraction and Diseases of the Eye, by Dr. Jackson, comprises the larger half of the volume, and is particularly thorough and satisfactory. The principles of the normal refraction of the eye, its more common errors and their modes of correction, are first clearly presented, and following this we find all that is of practical interest concerning the various diseases and injuries of the eyeball and its appendages. The author has managed his subject with admirable skill, and the student who acquires all that Dr. Jackson here lays before him, will have much more than a mere foundation for future work.

Part II, by Dr. Gleason, treats of the nose and throat, and is, as the author states in his preface, largely made up of extracts from the writings of Seiler, Bosworth, Brown and others of the leading throat and nose specialists. The selections have been judiciously made and arranged, and will, doubtless, prove of much value to the student in connection with his dispensary experience. Both portions of the work are generously and well illustrated, and to each has been added a list of the principal drugs and formulæ used in the special branch of practice of which it treats.

Lectures to Nurses on Antiseptic Surgery. By E. Stanmore Bishop, F.R.C.S. New York: Bromfield & Co., 1890.

The author has succeeded in condensing within the sixty-five pages of this little book the fundamental principles of antiseptic surgery in a manner deserving of great praise. The literary liquid diet fed to nurses on account of the supposed embryonal condition of their cerebral development is one little calculated to fit them for the grave responsibilities of their chosen profession. The writer of this book shows that scientific accuracy is not incompatible with a lucid, attractive style of writing, entirely free from technical verbiage. We know of no elementary work in which the broad principles of bacteriology and antiseptic surgery are more carefully and clearly explained. We would like to see more stress laid upon the proper method of cleaning the hands, and would take exception to some of the author's statements, to wit: that the main objection to carbolized gauze as a dressing lies in its irritating qualities.

Some Fallacies Concerning Syphilis. By E. L. Keyes, M.D. Detroit, Michigan: George S. Davis, 1890.

This little brochure of seventy-one pages is written in Dr. Keyes' characteristically attractive style, and will well repay the half hour required for its perusal.

The author states that he has thrown together thirteen fallacies which he finds to be entertained to a greater or less extent by the profession and the public. Upon these points he has endeavored to disseminate more correct views. Certain of these fallacies are widely entertained, and even supported by able writers and thinkers in syphilography. In fact, some of the doctrines which Keyes unhesitatingly characterizes as fallacies have so many supporters that the question as to their truth can be fairly considered *sub judice;* there-

fore we question the wisdom of any individual characterizing such teachings as fallacies until the demonstration that they are so is complete and overwhelming. Others of the propositions termed fallacies imply for their acceptance such an absolute ignorance of the rudimental knowledge of syphilis that we doubt whether they have any wide acceptation.

This book is an exceedingly clever production, forcibly setting forth the views of its distinguished author. We do not, however, think the context absolutely in accord with the title.

PRACTICAL SANITARY AND ECONOMIC COOKING, ADAPTED TO PERSONS OF MODERATE AND SMALL MEANS. By MRS. MARY HINMAN ABEL. American Public Health Association, 1890.

To those whose means are moderate or small their amount is a matter of not greater importance than is the knowledge how best to use them. The little volume before us—the fifth of the Lomb Prize Essays, and originally entitled "The Five Food Principles, Illustrated by Practical Recipes,"—is a work admirably adapted to the purpose which called it forth.

The authoress discusses, in a brief but lucid manner, the general classes of food requisite for the maintenance of the human economy, and their several uses, and gives many valuable hints about furnishing a kitchen, and about the most advantageous methods of utilizing the furniture in the general principles of food preparation. She then turns to individual articles of diet, discusses briefly, but in sufficient detail, their relative merits and disadvantages and the ways in which they may best be utilized, and brings her essay to a graceful and suitable close by furnishing a series of sample *menus* which surprise one both by the smallness of the cost required to provide a wholesome and savory meal and by the pleasing variety that a knowledge of the culinary art, such as our authoress evidently possesses, is able to afford to persons of even the most limited means. This little book should be widely and attentively read, and cannot fail, in our opinion, to be productive of much comfort and satisfaction to those for whom it was written.

MISCELLANEOUS.

IMPROVEMENTS IN THE HOSPITAL.

THERE is every reason to believe that the new class in the University will be at least as large as that of last year, as the number of matriculates at this date considerably exceeds that at the same time one year ago.

Advantage has been taken of the Summer recess to put in order the laboratories and lecture rooms, and, notably in the hospital, numerous improvements have been made. Certain wards have been scraped and painted, the amphitheatre has been provided with an iron stairway on the outside, so that the large body of students may enter the lecture room without tramping through the building. The facilities for teaching the ward classes, in medicine, surgery and gynecology, have been increased, while half the out-patient waiting and consulting rooms have been repainted, it being intended to extend these improvements to the entire hospital as rapidly as possible. The new autopsy theatre is also now finished, and is ready for use.

AMERICAN ORTHOPÆDIC ASSOCIATION.

THE fourth annual meeting of the American Orthopædic Association was held in Philadelphia September 16th, 17th and 18th. The meetings took place at the College of Physicians. In addition to the business of the association, more than thirty papers were read. The meetings were presided over by Dr. De Forest Willard, president of the Association and professor of Orthopædic Surgery in the University.

THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

THE annual meeting of the Association of Obstetricians and Gynecologists took place in the hall of the College of Physicians, September 16th, 17th and 18th. Dr. E. E. Montgomery presided over the deliberations of the association. The attendance was large, and numerous interesting papers were presented.

SALUTATORY ADDRESS.

THE opening address of the medical session of the University for 1890–1891 will be delivered by Dr. George A. Piersol, professor of Histology. Dr. Piersol will dwell particularly upon the desirability of including the natural sciences in the curriculum of our medical education, and the necessity for a more general appreciation by the medical profession of the importance of investigations in scientific medicine.

TRI-STATE MEDICAL ASSOCIATION.

THE second annual meeting of the Tri-State Medical Association of Alabama, Georgia and Tennessee will be held in Turner Hall, Chattanooga, Tenn., on October 14th, 15th and 16th. It promises to be one of the most successful, profitable and entertaining meetings ever held in the South.

The membership is not restricted to the three States, and by furnishing proper credentials, and remitting one dollar to the secretary, any graduate of a recognized medical college may be enrolled as a member of this association.

DA COSTA'S "MEDICAL DIAGNOSIS."

THE seventh edition of "Da Costa's Medical Diagnosis" is now announced by the J. B. Lippincott Company as ready. The work has undergone a thorough revision, and many chapters have been entirely rewritten, so as to inculcate all that has been added to our knowledge of disease up to the present time. A number of woodcuts are included, especially of such micro-organisms as have proved to be of practical significance in diagnosis. All the illustrations are original, and many are from sketches, or based on sketches, taken directly from cases of interest.

PERSONAL NOTES.

DR. SAMUEL G. DIXON has resigned his position as professor of Hygiene in the University of Pennsylvania, and accepted a professorship in the Academy of Natural Sciences.

Dr. John K. Mitchell, instructor in clinical medicine in the University of Pennsylvania, has returned to his hospital and private work (211 South Seventeenth Street) after a long absence, occasioned by an attack of typhoid fever last Autumn.

Dr. James A. Lydston, late chief of the Eye and Ear Department, Pension Bureau, Washington, D. C., has been elected to the chair of Chemistry in the Chicago College of Physicians and Surgeons.

CORRESPONDENCE.

Medical Progress in Japan.

To the Editors of the University Medical Magazine :

Gentlemen :—The "Review of the History of Medical Progress in Modern Japan," in the August Magazine, is a correct translation of the address recently delivered by Dr. Nagayo in Tokio, Japan.

In his enumeration of various factors in the medical progress in his country he does not give due credit, in my opinion, to the work of American and English physicians. There were many physicians belonging to these nationalities who labored zealously in the accomplishment of his country's reformation, among whom may be named our late Dr. Duane B. Simmons in charge of the general hospital of Yokohama ; Dr. Anderson, of the St. Thomas Hospital College, London, England, in charge of the Shinagawa Naval Hospital, and Dr. Manning, of the University Hospital College, London, England, my successor in charge of the Tokiofu Hospital. Besides these there were Doctors Hepburn, Antisell and McCarty, of American missionary fame, whose work was prodigious in separate and broad fields. Dr. Hepburn, in compiling his famous English and Japanese dictionary, rendered the country a service of incalculable benefit and value. It was a Bible to every medical man and student in the land—all depending on it for their acquirement of medical knowledge. It was the only valuable foreign and Japanese dictionary ; the German and Japanese, the French and Japanese, and the Dutch and Japanese (the last the best of the three), being greatly inferior and incomplete. Dr. Hepburn's work was thorough and complete, and it alone opened to Japan a wealth of Western benefit.

Dr. McCarty, through his wonderful knowledge of the Chinese language and customs, after serving his God twenty-three years in China, accepted a professorship in natural history which was offered to him by the Japanese Government. His teachings did immense good, as he was perfectly conversant with the Chinese language, the classical language of the Japanese.

Dr. Nagayo also fails to allude to the great value to his country of our foreign examples of hospital equipment and management, as exhibited in the American, British and French naval hospitals in Yokohama. Nor does he acknowledge the importance of foreign "department advisers," who were mostly Americans of ability and diplomacy, notably General Le Gendre, formerly U. S. consul at Amoy, and General George H. Williams, of Indiana, who advised many of the reforms to which Dr. Nagayo calls attention. I think he attributes entirely too much importance to early Dutch teaching and not enough to the later advent of our Commodore Perry.

After the accession of the present Mikado, in the first year of Meiji (1867 A.D.) American, English and German influences brought to pass most of Japan's reforms. In fact, they antedated this first year of Meiji (1867 A.D.), for even from the time of Commodore Perry's advent, both American and English teachings prevailed.

Materia medica took the first step in this later medical improvement, the foreign mercantile traders in Yokohama bringing to the Japanese Western medicines, instruments and books. Our American alkaloid, quinine, became a factor and civilizer in this reformation in medicine.

American, English and German medical influences remained about even until the fourth year of Meiji (1871 A.D.), when Prussian Army Surgeons Müller and Hoffman, through the courtesy of the German Emperor, were sent to Japan to take charge of the

Medical Department of its University; all the chairs of the school were quickly filled by German professors, and German influence progressed apace.

Nor should we overlook the peculiar private hospital systems so widely in favor among the Japanese in the early Meiji years, and so prevalent throughout the larger cities. Each physician of any reputation and income would quickly build and equip his own hospital, and its reputation and manner of management would be personal to himself, although all of these establishments were *general* hospitals. Many foreign doctors employed by the government, became *clandestinely* advisers to the private hospital staffs (the government commission or contract with the foreigner prohibiting private gain or other employment). In this way these hospitals were indirectly, all of them, foreign schools.

The address of Dr. Nagayo is of considerable historical interest, and I have adapted it, on account of its correctness in this regard, not without difficulty, however, owing to the peculiar manner of repetitional emphasis common with the Japanese.

There is one historical error, viz.: At the time of the Portuguese and Spanish introduction of Christianity, in 1574 A.D., most probably earlier, when, as he states, many foreign books were imported, medical teaching was imparted by the priests, educated Jesuits, who secured over a million converts and built many Christian churches, when Japan's population was considerably less than now. Such influence, continuing twelve years, from 1574 A.D., to 1586 A.D., or longer, perhaps from 1558 A.D., until the missionaries were banished or massacred and their churches destroyed, could not have been lost in a country where learning was masonically transmitted by Buddhist priests and Daimio "advisers" or physicians.

The dates, as given in the translation, are accurate. The original manuscript is herewith presented to the University Medical Library.

Yours very sincerely,

ALBERT S. ASHMEAD.

SUBSTITUTE FOR SANDBAG IN TREATMENT OF FRACTURES OF FEMUR.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE:

SIRS: I was much pleased to see Dr. Alexis Dupont Smith's article in your August issue, on "A Substitute for Sandbags in Treatment of Fractures of the Femur," and the illustration of his splint. The ideal foot-rest would, I believe, be produced by combining some of the features of the two forms of apparatus described. I have never been completely satisfied with my method of confining the foot and leg to the sliding rest by adhesive straps, and now Dr. Smith has solved the difficulty. By using pieces of leather tacked to the splint on either side of the foot and leg, and lacing them up in front, as shown in his illustration, we have, I believe, the best means of confining the leg to the splint.

In the use of the apparatus I have found the width advised sufficient, but should a broader base be desired, it can easily be obtained by increasing the width of the under board of the apparatus, or nailing to it a transverse strip, as shown in the illustrations of Dr. Smith, Volkmann and others.

The doctor's article also called my attention to the fact that I failed to state that a depression should be cut for the reception of the heel, to prevent its becoming excoriated.

Yours truly,

G. G. DAVIS.

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ORIGINAL ARTICLES.

EMBRYOTOMY; WITH A REPORT OF FIVE CASES.

By Barton Cooke Hirst, M.D.,
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The word embryotomy is used here in the sense of a destructive and mutilating operation upon the fœtus. It is, therefore, a generic term, and includes operations of this sort upon the head (craniotomy) and other parts of the fœtal body. Destructive operations upon the fœtus have been overshadowed of late by the revival of Cæsarean section in an improved form. It has even been asserted by a few enthusiasts that the latter will in the future banish the former from the list of legitimate obstetrical manœuvres. Embryotomy remains, however, a useful, an important and a conservative operation, and will, I am convinced, continue to deserve this description.

What is to be done when, after an attempt at version in a contracted pelvis, or with a large child, it is impossible to extract the head with justifiable force? When, in a contracted pelvis, with the head on the brim, the cord prolapses, cannot be replaced and in time ceases to beat? When the woman is much exhausted by a prolonged labor and hours spent in vain with the forceps? When, in case of difficulty from moderate contraction of the pelvis or relative disproportion, the choice lying between a destructive operation and Cæsarean section, the husband and wife, after full knowledge of the conditions, decide emphatically against the more dangerous operation for the woman? Can embryotomy be ignored in such cases? Until this question is answered in the affirmative, mutilation of the fœtus must hold an important position among obstetrical operations.

It should be remembered, moreover, in comparing the improved Cæsarean section with craniotomy, that the latter, also, has undergone an improvement in

technique which makes it absolutely safe for the mother in those cases which furnish a relative indication for Cæsarean section. This is not always known nor remembered, if I can judge by two cases recently under my notice. Both women had very likely contracted pelves of a moderate grade. In both there was prolapse of the umbilical cord early in labor, with the head still at the brim. Reposition failed, and the cord ceased to beat; and yet these women, each attended by a professed expert in obstetrics, were delivered by long and difficult forceps operations, one of which occupied more than two hours! This shows a prejudice against craniotomy in the professional mind that must often have disastrous consequences. Again, I know of a case of recent occurrence, in which, after version, the head remained impacted in the pelvis five hours, in spite of the vigorous traction of two strong men. When, finally, craniotomy was done upon an infant which had been dead for hours, relief came too late, and the woman died almost immediately.

These cases, of which I have personal knowledge, could be multiplied many times if every practitioner published all the unfortunate results in obstetric practice of delay and hesitation in resorting to craniotomy when the operation is plainly indicated.

Case I.—A young negress, attended by a medical student in dispensary practice; pelvis rachitic (measured after delivery), conjugate 8+ cm. The first stage had lasted more than forty-eight hours, when the membranes ruptured, the liquor amnii gushed out and carried a loop of the umbilical cord down to the vulva. When I saw the woman, pulsation in the cord had ceased. The head, unusually large, rested upon the pelvic brim. Craniotomy was done, and the child extracted in about twenty minutes. Forceps or version would have taken much longer, if, indeed, the child—of unusual size—could have been so delivered, and, moreover, would have been much more dangerous to the mother. The woman made a good recovery, without complications.

Case II.—A woman who had borne one or two children before, was seen in consultation, after she had been a long time in the first stage of labor. The head rested upon the brim, and was quite movable. It was so large, however, that although the pelvis was but moderately contracted, I gave as my opinion that craniotomy or Cæsarean section must be done, as the head could not, even by forceps or version, be dragged through the pelvis. The husband flatly refused Cæsarean section, as would, in a similar case, the most enthusiastic advocate of the operation were his own wife in question. Being of the Roman Catholic faith, he hesitated to allow craniotomy on a living child. An additional consultant was asked for and summoned. He believed the child could be delivered by version, which was consequently done. The body, shoulders and arms were delivered, but the head could not be extracted, in spite of powerful traction by the original attendant and the last consultant, each of whom weighed over 180 pounds. After some time, the child being quite dead, I was allowed to perforate and extract the head, which was easily accomplished. The mother did well.

Case III.—Seen in consultation with Drs. Hamill and Christian. A woman, with slightly-contracted pelvis, in labor with her third child.

When I saw her the os was fully dilated, but the head rested above the brim. The "pains" were most powerful and of frequent occurrence. The lower uterine segment was dangerously stretched, the contraction ring being but two finger-breadths below the umbilicus. Forceps had been tried by both attendants for more than two hours. I applied both axis-traction forceps and an ordinary instrument myself, without success. Version was out of the question, on account of the distention of the lower uterine segment. The fœtal heart beats could be distinctly heard, so it was a question between Cæsarean section and craniotomy upon the living child. The husband refused the former, which, indeed, would not have been advisable in a woman exhausted by a prolonged labor and subjected for hours to vigorou

pulling with the forceps. Craniotomy was easily performed, and the head extracted without difficulty. The woman died eighteen hours afterward, from a ruptured hæmatoma in the left broad ligament—an accident for which the operation was in no way accountable.[1]

CASE IV.—An elderly primipara had gone about a month beyond the normal period of pregnancy. After a labor of many hours, without progress, the attending physician called a consultant to assist in an attempt at version. The child was turned successfully and the feet pulled out to the vulva, but it was impossible to extract the legs or the breech, the latter being impacted in the pelvis. After prolonged attempts to free the legs on the part of the physicians, both gentlemen of experience in obstetrics, I was asked to perform embryotomy.

Being driven rapidly at night some nine miles into the country, I found on my arrival the woman much exhausted, the feet of the child just appearing at the vulva, no progress having been made for many hours. It was quite impossible to drag down the legs even with strong fillets. Having two cranioclasts in my bag, by crushing a leg with one instrument while it was pulled out a little way with the other until the pelvis was reached, I finally succeeded in delivering the breech. The head was brought through by combined traction and powerful suprapubic pressure without instrumental aid. The woman made an uncomplicated recovery. The child was enormously overgrown.

CASE V.—An elderly primipara, said to be in labor at term, but probably I think gone beyond it, seen in consultation with Dr. R. H. Hamill. Labor had been ushered in twenty-four hours before I saw her by rupture of the membranes and discharge of the liquor amnii. The os had been partially dilated, but the head remained fixed at the brim, and was evidently on palpation too large to pass into the pelvis unaided. Forceps had been used, with no other result than to fix the head more tightly in the grasp of the pelvic brim. Version was considered, but the head was so tightly jammed that it was impossible to pass the hand by it into the uterine cavity, nor could the head be pushed back, not only on account of its fixation in the pelvis, but also by reason of the tight grasp of the tetanically contracted uterus upon the fœtal body. The forceps were again tried and vigorous traction made for more than two hours without the slightest advancement of the head.

Craniotomy was then proposed to the husband, and with his approval performed by Dr. Hamill. Although the intracranial branch of the cranioclast was swept around in all directions and pushed in as deeply as possible, and although the whole cerebrum flowed out in front of the head, the child made convulsive efforts at respiration for a few minutes after birth. The woman made a good recovery.

Technique of Craniotomy.—As at present performed, the operation in pelves with a conjugate diameter of not less than two-and-a-half inches is very easy and perfectly safe, if done with ordinary skill and not put off too long. The only instruments necessary are a strong vulsellum forceps, a perforator, preferably Blot's, as improved by modern instrument makers, and a Braun's cranioclast, with the addition of a pelvic curve. In the first craniotomy of this series, I used a Braun instrument, recently imported, which, perfectly straight, was with difficulty applied to the head at the pelvic brim, and as a tractor exerted force in such a faulty direction that the anterior lip of the cervix was pulled out in plain sight before the head could be delivered.

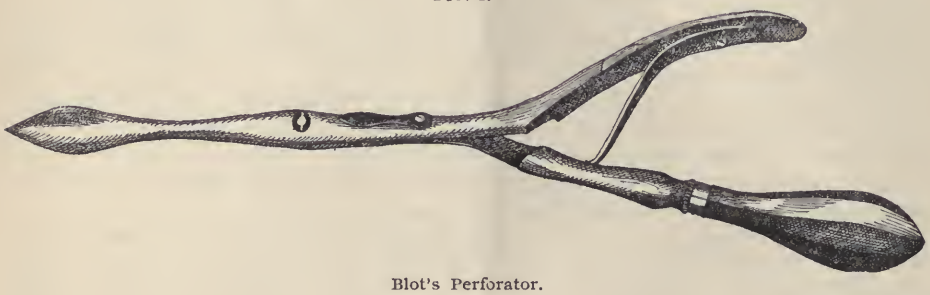
After this experience, some four years ago, I had an instrument-maker copy Braun's cranioclast with the simple addition of a good pelvic curve. The instrument thus modified has been, in practice, a decided improvement on the original model. It is true that with the pelvic curve the cranioclast must, as a rule, be applied at the right side of the pelvis, but I have not found this a disadvantage, even when the occiput is toward the left. Should it be positively necessary to apply the instrument on the left side, the blades might be reversed

[1] UNIVERSITY MEDICAL MAGAZINE, I, 526.

so that what is usually the intracranial branch would lie externally. This would require extra care and skill in order that the maternal parts should not be injured.

The operation itself is thus conducted: The vulsellum forceps is fastened firmly in the child's scalp and handed to an assistant, who makes strong traction, while the operator with the perforator pierces the most accessible suture or

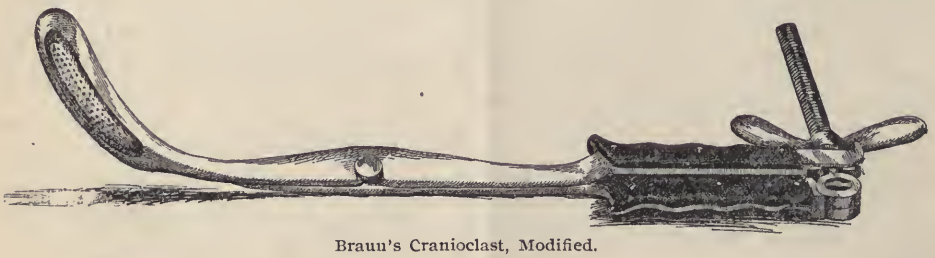
FIG. 1.



Blot's Perforator.

fontanelle. The puncture is widened by opening the blades of the perforator in different directions. The intracranial branch of the cranioclast is then introduced within the skull, inserted as deeply as possible and stirred about in all directions to break up the brain. The other branch is then adjusted and screwed as tight as possible. The head can then be delivered easily, the brain

FIG. 2.



Braun's Cranioclast, Modified.

flowing out in front of it. A copious vaginal douche afterward is sufficient in an ordinary case. If the child has been dead some time it is better to wash the brain out with bichloride solution, by means of a big catheter inserted through the opening in the skull, before the adjustment of the cranioclast. In such a case, also, an intrauterine injection afterward is advisable. The instruments are cleansed before use by immersion in a pitcher full of boiling water.

RIB FRACTURE FROM MUSCULAR ACTION, WITH FORTY COLLECTED CASES.[1]

By Joseph P. Tunis, M.D.
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As the treatment of fractured ribs forms no inconsiderable part of a surgeon's practice, some remarks on the etiology of the more unusual types of this injury may not be out of place. It is the object of this paper to report two recent cases where ribs were fractured apparently from muscular action alone, and to collect those examples which have already been published.

Different views have been expressed on the question whether a fracture can be caused by muscular action alone in bones not previously diseased. Some authors have positively denied such an etiology, namely: Richerand, Vidal (de Cassis) and Hornidge. Others maintain a non-committal silence, like Petit, Duverney, Monteggia, Desault and Bryant. But the majority of surgical writers admit the possibility of such mechanism, as Samuel Cooper, Nélaton, Malgaigne, Purch, Gurlt, Follin, Marchand, Erichsen, Agnew, Ashhurst, Hamilton, Gross, Packard, Stimson and others. We have the best authority, therefore, for believing that bones have been and will be fractured by muscular action alone even in persons of good constitution. The elder Gross writes: "A diseased state of the bone is not at all necessary to the production of this accident," and Gurlt, who collected a large number of the so-called "spontaneous fractures," confirms this view, while Simon Paul and Professor Stimson, in his recent "Treatise on Fractures," furnish additional evidence.

Moreover, in certain instances when an autopsy was possible from some extraneous cause, a careful examination of the bones has demonstrated their healthy structure.[2] Of the 133 cases collected by Gurlt, the majority presented some lesion which rendered them liable to fracture. Any condition which lowers the normal consistency and resistance of the bone structure must predispose to fracture, as osteomalacia, rickets, cancer, syphilis, scrofula,[3] advanced age (*i. e.*, over 50),[4] or atrophy from continuous confinement,[5] etc. Hamilton writes: "In short, all diseases dependent upon cachexia more or less predispose to the occurrence of fracture." In the presence of such a cause fracture from muscular action is readily explained.

There are, however, numerous cases on record where such accidents have occurred in healthy individuals, the determining cause of fracture being mus-

[1] Read before the Philadelphia County Medical Society, September 24th, 1890.
[2] Herard (Case 2), L'Union Médicale, 1855, p, 459.
[3] Principles and Practice of Surgery, Ashhurst, 4th ed., 1885, p. 224.
[4] Sappey, Traité D'Anat. Descriptive (3d ed), 1876, tome I, p. 66.
[5] Dict. Practical Surg. Heath., Frag. Ossium, Vol. I, 1886, p. 573.

cular action, and the mechanism varying with the anatomy of the bone affected. If these conditions are true of other bones, why may they not be equally true of the ribs?

The ribs offer three factors favorable to fracture: First, by their shape, being long, thin bones; second, by their position, firmly attached at the vertebral and more or less free to move at the sternal end; and third, by reason of the powerful muscles attached to their bodies. They are "elastic arches," it is true, and capable of considerable movement; but their elasticity has its limit, and their movement is dependent entirely upon the muscles attached to them. Of these muscles the diaphragm appears to be the most favorably situated to produce rib fracture. Centrally attached by its crura and ligaments to the vertebral column, it is connected at its circumference "on either side, to the inner surface of the cartilages and bony portions of the *six or seven inferior ribs*, interdigitating with the transversalis."[1] Take, for example, the ninth rib. If the diaphragm should contract, it would draw the anterior third of this bone toward the vertebral column, the other two-thirds being held more or less firmly *in situ* by the serratus magnus attached posteriorly, the internal oblique, the transversalis and the intercostals. This contraction of the diaphragm continuing, if sufficiently powerful, would fracture the bone like a bent bow at the point of least resistance. Where the attachment of the serratus magnus ends would seem a favorable seat for such a fracture. Has the diaphragm sufficient force to accomplish this? It has sufficient force to free the throat or bronchi of irritating material, almost approximating the sternum and the vertebral column in dyspnœa, often demonstrating clearly its power in membranous croup. It can eject forcibly the contents of the stomach on occasion, or cause great distress and even death from obstinate hiccough. Well supplied with blood, exercised day and night, its actions uncontrolled, we may with some reason believe that, suddenly exerting all its force on three or four ribs, one or more may fracture. Certain it is that the ribs to which the diaphragm is attached are most frequently fractured (almost the only ones), and the circumstances which excite the action of that muscle are most often given as the exciting cause of the accident.

Above the sixth rib other muscles enter into the mechanism of fracture. In the case which Dr. C. B. Nancrede[2] has reported, and in Dr. Bird's case,[3] where the second rib yielded under unusual muscular strain, the action of the pectoralis minor seems to have been the most probable determining cause, as this muscle is attached to the third, fourth, and fifth ribs, often to the second, and is inserted into the coracoid process of the scapula. If the scapula were firmly held in place by the powerful muscles attached to it, the pectoralis minor would be in a position to act with the advantage of leverage. This muscle, or the serratus magnus,[4] would draw the anterior third of the bone away from the vertebral column, directly opposite to the movement of the lower ribs, under the action of the diaphragm. Thus the mechanism in the large majority of these cases may be

[1] Gray's Anatomy, new Am. ed., 1883, p. 402.
[2] See Case 7, Class I.
[3] See Case 42, Class III.
[4] Gray's Anatomy, p. 410.

reached. Some still remain which require a special explanation from the facts of the case.

Malgaigne was the first to call attention to the possibility of rib fracture from muscular action. He collected eight examples (Nos. 1, 13, 14, 15, 34, 35, 36 and 37), of which he wrote:

"I think it very probable that in all these cases the ribs had undergone more or less of the atrophic thinning of which I have before spoken; and that the fracture was induced by muscular action, which in coughing approximates the sternum and the spinal column, just as exterior pressure does."

Paulet[1] gives six more examples (Nos. 2, 3, 4, 5, 17 and 18), and mentions five cases where the *costal cartilages* were ruptured by muscular violence[2].

From a photograph, showing physiognomy of patient and seat of fracture.

Theophile Mazeille,[3] in 1882, brought together twenty-four cases in tabular form. Since then so many additional cases have occurred that they number now at least forty.

The two recent cases here given have not been previously reported.

Mrs. D., 52 years old, in March, 1890, came to the Episcopal Hospital Dispensary seeking relief for a hacking cough and severe pain in the left side. Her emaciated figure, gaunt features and parchment-like, pockmarked skin gave evidence of long-continued mal-hygiene

[1] Dict. Encycl. des Sc. Méd.; art. Côtes, p. 61, Paris, 1877.
[2] Ibid., p. 84.
[3] Thèses de L'Ecole, No. 263, "Des fractures de Côtes par action musculaire, p. 45, Paris, 1882.

and mal-nutrition. Her family and personal history were negative, but her broad flat nose, with deep triangular markings running off from it, made us suspect inherited syphilis. For the last three years she had suffered from rheumatism, but could remember no other sickness. Three out of her four children died in childhood. She stated that eleven days previous to her coming to the hospital, while lying on her *right* side on a lounge, she was suddenly seized with a violent fit of coughing. While coughing she felt a severe knife-like pain in her *left* side, and at the same instant something snapped "like a little stick." Not thinking it possible that she could have fractured a rib in such a manner, a sedative cough mixture was prescribed, and she was directed how to apply a turpentine stupe.

She returned the next day unimproved and complaining bitterly of the pain in her side. A thorough examination of the chest showed then positive signs of fracture over the tenth rib, on the left side, about its middle. Dr. H. C. Simes, Dr. George Boyd, Dr. W. R. Lincoln, Dr. F. Rudderow and Dr. L. H. Adler, Jr., afterward confirmed the diagnosis.

There was no evidence of any direct violence in this case, and the patient gave a very clear account of the accident. Her cough was due to an attack of bronchitis. Strapping the affected side brought immediate relief, and she was discharged, cured, in six weeks.

Dr. Edward Martin has kindly furnished me with the particulars of the following case, which he treated recently at the University Hospital Dispensary :

James C. H., aged about 28, a slender built, muscular man, of healthy parentage, by occupation a laborer. While lifting a heavy beam together with several workmen the weight was suddenly thrown entirely upon himself. He was stooping slightly forward at the time with his fingers grasping the bottom of one end of the beam, and was subjected to a sudden, violent strain. He heard a distinct crack and felt an acute pain in the left side, as though a knife had been thrust in. The pain was greatly aggravated by breathing or coughing, and he distinctly perceived a sense of grating on motion. On examination the sixth rib was found fractured at its sternal angle. There was no deformity, no ecchymosis. The patient was strapped and made an uninterrupted recovery. There was no history of unusual brittleness in the bones of himself nor in any members of his family.

For convenience the collected cases, forty in all, have been divided into three classes :

Class I.—Healthy Bones.

Case No.	Reporter.	Year.	Journal.	Sex.	Age.	Physical Condition.	Exciting Cause.	Position of Patient.	Diagnosis. Side; Rib; Site.
1	R. J. Graves[1]	1833	Dublin Jour. Med. and Chem. Sciences, Vol. III, p. 355.	F.	47	Strong, vigorous and muscular, with an attack of bronchitis.	Violent cough.	Unrecorded.	Left side 9th or 10th rib Ant. ⅓
2	Herard[2]	1855	L'Union Médical, Tome IX, No. 3, p. 447.	F.	22	Seven months gone in pregnancy; bronchitis for six months.	Violent cough.	Unrecorded.	Left side 11th rib Mid. ⅓
3	Piffard	1860	Gaz. des. Hôp., No. 111, p. 442.	M.	49	In excellent health, except for a tenacious cough.	Attack of cough.	Standing, leaning against a door.	Right side 11th rib Mid. ⅓
4	De Groninger[3]	1861	Archiv. der Heilkunde, Vol. I, p. 473.	M.	45	Strong, healthy laborer.	Effort to prevent falling.	While walking home.	Right side 7th and 8th ribs Mid. ⅓
5	Podrazki	1872	Oesterreich Zeitschrift für praktische Heilkunde, No. 18.	M.	50	A vigorous man; got a few drops of water in his larynx.	Coughing to prevent choking.	Eating his dinner.	Right side 10th rib Mid. ⅓ (?)
6	Podrazki	1873	Ibid., No. 44, October.	F.	30	Woman of good constitution.	Sneezing.	Unrecorded.	11th rib Ant. ⅓
7	C. B. Nancrede[4]	1874	Phila. Med. Times, No. 4, p. 535.	M.	44	"A singularly healthy, vigorous man."	Straightening scythe.	Standing bent over.	Right side 2d rib 2½ in. from sternum.
8	Chenery[5]	1878	Boston Med. and Surg. Jour., Vol. XCVIII. May.	F.	23	Pregnant; had bronchitis; General condition good.	Coughing.	Unrecorded.	Right side "lower fixed rib."
9	Brookhouse[6]	1879	The Lancet, Lond., p. 503.	F.	36	Highly neurotic; in good health; nine months gone in pregnancy.	Coughing.	Sitting sideways in bed.	Left side 6th rib 2 in. from angle.
10	Desnos	1885	Bull. et Mém. de la Soc. Med. des Hôp. de Par., Vol. II, p. 311–312.	M.	30	Chronic bronchitis; asthma and emphysema.	Coughing.	Unrecorded.	Left side 9th rib in front of angle.
11	D. C. Hawley	1890	Med. Standard, Chicago, Vol. VII, No. 5, p. 135.	F.	31	Suffering from chills and fever.	Vomiting.	Resting upon her elbow in bed.	Right side 9th rib Ant. ⅓
12	Edward Martin	1890	University Medical Magazine, Nov., 1890.	M.	28	Slender, healthy, muscular man.	Muscular strain.	Bent over lifting heavy weight.	Left side 6th rib Sternal angle.

[1] Also Med. and Surg. Review, October, 1833, and Am. Jour. Med. Sc., Vols. XIII–XIV, No. 26, 1834, p. 553.
[2] Also, Med. Times and Gazette. Vol. II, 1860, p. 441. (A review.)
[3] Also, Med. Times and Gaz., 1861, Vol I, p. 450.
[4] Also, Centralblatt für Chirurgie, 1874.
[5] Also, Med. Times and Gaz., 1878, No. 2, p. 88.
[6] Additional information secured from a personal letter.

Class II.—Diseased Bones.

Case No.	Reporter.	Year.	Journal.	Sex.	Age.	Predisposing Causes. Physical Condition.	General Condition.	Exciting Cause.	Position of Patient.	Diagnosis; Side, Rib and Site.
13	Naukevill	1835	Lond. Med. Gaz., Vol. XVI, July.	F.	63	Advanced age. Malnutrition and chronic bronchitis.	Weak and emaciated.	Coughing.	Lying in bed.	Left side 5th and 6th Anterior ⅓
14	Naukevill	1835	Ibid. and Am. Jour. Med. Sc. Vol. XVII–XVIII, p. 520.	F.	59	Advanced age and malnutrition.	Much emaciated.	Coughing.	Unrecorded.	Left side 10th rib Mid. ⅓
15	Berard	1841	Lancette Francaise, 1841, No. 16.	F.	54	Suspected syphilis. Advanced age and bad living.	Weak and emaciated.	Coughing.	Unrecorded.	Left side 9th, 10th and 11th ribs. Anterior ⅓
16	Maingault	1852	E. L. Beylard, Du Rachitis, etc. Paris, 1852, p. 76–83.	F.	35	Osteomalacia or rickets and mal-hygiene.	Anæmic.	Coughing.	Unrecorded.	Three ribs.
17	Denonvilliers	1853	L'Union Médicale, Tome VII, No. 65, p. 258.	M.	55	Advanced age and pulmonary emphysema.	Emaciated.	Turning in bed.	Lying full length.	Left side 9th rib Mid. ⅓
18	F. Castella	1861	Gaz. des Hôpitaux, No. 150, p. 599.	M.	39	Hereditary scrofula.	Strong looking.	Sneezing.	Seated at a bar.	Left side 9th rib Mid. ⅓
19	Philip Miall	1871	British Med. Jour. Jan., 1871, p. 8.	F.	53	Tuberculosis; advanced age and pregnancy (primipara).	Anæmic.	Coughing.	Unrecorded.	10th rib Mid. ⅓
20	Alexander	1871	Ibid., p. 61.	F.	55	Advanced age and malnutrition, with chronic bronchitis.	Weak.	Coughing.	Sitting at the fireside.	Left side 11th rib Mid. ⅓
21	Gillette	1876	L'Union Médicale, No. 75, p. 1017.	M.	56	Tuberculosis and advanced age.	Third stage of phthisis.	Coughing.	Unrecorded.	Left side 11th rib Mid. ⅓
22	Despres	1882	Gaz. des Hôpitaux, 1882. No. 25.	F.	53	Advanced age; chronic bronchitis.	Fairly good.	Severe cough.	Lying in bed.	Left side 11th. 4 fingers from cartilaginous attachment of sternum.

23	Doit	1882	L'Union Médicale, Paris, 1882, 3 s. XXXIII, 676.	M.	59	Advanced age, tuberculosis and syphilis.	Good.	Violent cough.	Sitting at his tailoring.	Left; 6th rib Ant. ⅓, below nipple.
24	Underhill, (T. E.)	1884	Lond. Lancet, 1884. Vol. 1, p. 1162.	M.	54	Advanced age; great muscular development.	Excellent.	Violent muscular action.	Erect, wielding a pick.	Left, 6th, 7th and 8th in front of angle.
25	Wyman, (H. C.)	1885	Jour. Amer. Med. Ass., Chicago, 1885, 512.	M.	72	Advanced age; bronchitis	Good.	Sneezing.	Standing upright.	Right, 8th near angle.
26	Desnos	1886	Bull. et Mém. de la Soc. Médicale des Hôp de Paris, II, 310–317.	M.	66	Advanced age.	Chronic bronchitis.	Violent cough.	Sitting on a bench.	Left, 8th Mid. ⅓
27	Antony	1886	Ibid., 1886. V.I.III, 3s, p. 247.	F.	63	Advanced age.	Chronic bronchitis.	Violent cough.	Unrecorded.	Right, 9th Mid. ⅓
28	Ladroitte	1886	La France Médicale. No. 95, 1886. Vol. II, p. 1133–35.	M.	56	Advanced age.	Excellent.	Unusual muscular action.	Standing.	Right, 5th Near ant. angle.
29	C. Tisnè	1886	Ann. Méd. Chir. Franc. et Etrang., Paris, 1886. II, 286-293.	M.	68	Advanced age.	Chronic bronchitis.	Coughing.	Unrecorded.	8th rib at junc. of mid. and posterior ⅓
30	A. Kunos	1886	Ann. Soc. de Méd. d'Anvers, 1886, XLVII, 383-386.	F.	66	Advanced age; small bones and large muscles.	Excellent health.	Unusual muscular action.	Lying in bed.	8th or 9th at junc. of post. and mid. ⅓
31	S. A. Fisk	1888	Boston Med., Surg. Jour. No. 119, page 325, and a letter.	M.	32	Tuberculosis; diabetes insipidus and inflam. rheumatism.	Vigorous looking.	Violent cough.	Seated sideways on a chair.	Right, 10th mid. ⅓
32	Edw. C. Masser	1890	Brit. Med. Jour., Lond., Vol. I, p. 953.	M.	54	Advanced age; Bright's disease and bronchitis.	Feeble looking.	Coughing.	Unrecorded.	Left side 8th rib Mid. ⅓
33	Tunis	1890	University Medical Magazine, Nov., 1890.	F.	52	Suspected congenital syphilis and advanced age.	Emaciated, underfed and overworked.	Coughing.	Lying on a sofa on her right side.	Left side 10th rib Mid ⅓

Class III.

CASES WITH INCOMPLETE RECORDS.

Case 34.—Benjamin Gooch (*Medical and Chirurgical Observations*, Appendix, London, 1767, p. 53) reports: A young man at the hospital at Port-Mahon suffered from necrosis of a rib caused by a kick. When nearly recovered he fractured a rib on the opposite side during a paroxysm of coughing. He was much emaciated. Four surgeons diagnosed a complete fracture.

Case 35.—M. C. Broussais (*Jour. hebdomad.* Oct., 1835, p. 107) at the examination at Val-de-Grace of a patient suffering from chronic pneumonia and hypertrophy of the heart, found on the fourth rib a tumor of the size of a pigeon's egg; not painful; a fracture was diagnosed.

Case 36.—M. Christy, senior surgeon of the hospital at Port-Mahon, assured Malgaigne that he knew a gentleman who had fractured a rib in a violent effort at coughing. (*Vide* B. Gooch, or *Archiv. Générales*, Paris, 1838, vol. ii, 3d series, p. 272.)

Case 37.—Monteggia (*Institutioni Chirurgicale Fratture*, Par. 17 and 23, 1802) saw a man of about 50 who had fractured a rib while coughing. The sound produced at the moment of fracture was heard by all in the room.

Case 38.—Hilton (*Lancet*, Lond., 1852, 1, p. 143) mentions a man who fractured a rib by muscular contraction while mounting a spirited horse. He was treated for pleurisy at first, without relief.

Case 39.—T. Mazeille in his thesis quotes a case supplied him by Th. Angers: A hat-seller, 41 years old, was admitted to Hosp. Tenon with fracture of two ribs, apparently from muscular effort. The patient fell forward while walking and only his head and one hand touched the ground. Signs of fracture in posterior portion of middle of thorax. No marks of direct violence.

Case 40.—F. D. Bird (*Australian Med. Jour.*, May, 1889, p. 195) reports a married woman with negative history, who fractured her second rib on the left side, about one and one-half inches from the costal cartilage, while lifting one side of a heavy chest.

CONCLUSIONS.

I. Forty cases having been reported, we may reasonably expect to hear of others, perhaps to see them ourselves.

II. Of these accidents more than one-fourth have occurred in individuals of apparently sound constitution.

III. The left side has been most often affected, and either the middle or anterior third of the rib the usual positions of the fracture. Of forty-nine fractures only five have occurred above the sixth rib. The great majority have been among the lower six (omitting the twelfth).

IV. The exciting causes have been: Coughing (25), muscular effort (11), sneezing (3), and vomiting (1). The determining cause has been the action of the muscles, unless thirty-four observers have been deceived by the testimony of patients, who could gain nothing by such deception.

V. Herard reports the youngest example (Case 2) of this accident, a

woman 22 years old. No case has been published younger than this, no doubt on account of the great elasticity of the ribs in youth.

VI. Of these forty cases two died of some intercurrent affection. The remaining thirty-eight made a complete recovery in the usual time.

VII. More men (22) have suffered than women (17), and the average age has been 48 years.

RIB AFFECTED.				SIDE AFFECTED.	
Second rib	2	Eighth rib	7	Right side	10
Fourth "	1	Ninth "	7	Left side	19
Fifth "	2	Tenth "	6	Unrecorded	11
Sixth "	5	Eleventh "	7		—
Seventh "	3	Unrecorded	9	Total	40

The difficulty and the doubts which have attended the diagnosis of many of these cases ought to disappear as more and more examples of this accident are reported. Already by the consent of the majority of surgeons and by the evidence of accumulated cases, the possibility of rib fracture from muscular action even in persons of sound constitution seems sufficiently proven.

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CARIES OF THE WALL OF THE AUDITORY CANAL.

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It has been well laid down as a diagnostic point in diseases of the ear, that discharges containing mucus must of necessity come from the tympanum; and in more than nine-tenths of the cases where the flow is purulent, the source of the pus is the tympanic cavity, although it may not always be possible to locate the perforation through which it finds exit. Otorrhœa is almost synonymous with middle ear trouble. There are some exceptions, however, and not only may we have a short-lived purulent flow result from the formation of one or more furuncles in the canal, but there are some chronic otorrhœas in which the tympanum is unaffected. Such a diagnosis must be guardedly made, for it is easy to overlook minute perforations of the drum-head, especially when they are in the flaccid membrane; and a small sinus leading into the antrum can generally be located at first only by the granulations which almost invariably spring up on its margin. Yet cases where the hearing is normal and the air-douche entering the middle air forces no air or fluid into the canal, may generally be accepted as having a lesion independent of the tympanum. Swelling and obstruction by the discharge are apt to interfere markedly with the hearing, but this disappears on cleansing. The Shrapnell membrane must be closely scanned for perforation or other evidence of suppuration within the attic, for this is not always excluded by good function of the organ or failure of the inflation to give evidence of exudation there; and cases are occasionally met where a purulent collection in the canal, especially on its upper wall, results from the burrowing outward of pus from this portion of the drum cavity. Indeed, very extensive abscesses are sometimes thus formed, involving the mastoid region, as though the bone there were affected, or spreading in other directions to form collections above or in front of the ear. Such a case was treated in my clinic at the Episcopal Hospital in 1887, where the pus invaded the entire temporal fossa and laid bare the bone over an area nearly three inches in diameter. Yet these cases can generally be readily recognized if the flaccid membrane can be seen at all.

There is quite a considerable group of cases in which the lesion is confined to the auditory canal, and investigation shows that the source of the pus is a carious area, usually upon the posterior or lower wall. Every aural clinic reports each year a few cases of "polyp of the external canal," most of which are cases in point. Aside, of course, from the polyps which grow from the tympanum into the canal, and the rare instances where poulticing has led to

the formation of exuberant polypoid granulations from a furuncle, all cases of such outgrowth have a carious area beneath them ; and while this may at times be a sinus leading into the antrum or mastoid, most frequently it is the isolated affection. I have detailed records of only a half dozen cases among the 3000 ear patients seen in the last five years, but have really met the lesion more often, as well as numerous instances where the loss of substance, due to the disease, was marked and unmistakable. A good instance of the latter, in a girl of 9 years, with a dry sinus below and behind the ear, was reported among the Shrapnell perforation cases brought before the American Otological Society at its last meeting; and an instance where the lesion of the wall is probably, though not certainly, related to the attic-suppuration is cited in a recent paper.[1] Two specimens among the forty temporal bones in my collection show the results: they are without history—but in each case the bone of the other side is normal.

FIG. 1.

Temporal Bone Showing Caries of the Posterior Wall of the Meatus.

The cause of the affection is not clear; probably there is no one cause that can usually be assigned. It is quite possible that at times it is due to a furuncular inflammation which penetrates deeply enough to injure the bone by destroying its periosteum. The general health is doubtless always largely at fault, and stands in need of careful attention in the treatment of the diseased condition. The progress towards healing is almost invariably slow, but may differ greatly in cases otherwise similar, so it is difficult to decide as to the value of various measures employed in treatment. Careful cleansing is, naturally, the first requisite, and is best secured by the use of peroxide of hydrogen, with a fine-pointed syringe. All granulation masses are to be snared or bitten away, and recurrence controlled by cauterization. Theoretically, it is good

[1] Med. News, Sept. 27th, 1890.

surgery to lay bare and scrape the carious area ; but this had better not be too hastily done, for the reaction may be considerable, closing the canal by the swelling, and retaining pus in a way that may prove dangerous. Healing may be about as prompt and with less loss of substance under the more expectant plan. The danger of the affection is small, and its interest is largely in the discrimination of it from the far more serious carious lesions of the deeper parts of the ear, with which it may readily be confounded.

Two cases from my private record present features of special interest.

In the first, a nurse sent me by Dr. Joseph Hoffman, there was increasing fever with discharge from the left meatus, severe pain and a boggy swelling above and around the ear. A furuncle was found upon the posterior wall, near the entrance, shutting off all view of the deeper parts. This had already opened, and its thorough evacuation revealed beyond it a more diffused swelling of the upper wall, from an opening in which pus was oozing. Some flabby granulations were removed and the opening enlarged, and it was then found possible to press out through it a considerable quantity of pus from above the ear. After thorough syringing, which aided in the evacuation, firm pressure was applied over the temporal region ; and as the auditory canal tended to collapse, a speculum was left in it, through which hot syringing was ordered. No tympanic lesion was discovered, and the hearing, which had been nearly abolished, was normal through the free canal. Prompt improvement followed, although it was several weeks before all discharge ceased and the formation of granulations was stopped. Some loss of substance was readily recognizable, but the probing, so far as it was pressed, touched little bare bone. Perfect healing, with some depression, soon followed ; and although she has suffered twice since with suppuration of the middle ear on the right, there has not been the slightest trouble on the left side.

The other case was that of a stalwart young Irish blacksmith sent me by Dr. William J. Taylor, under whose care he was for a lacerated wound of the hand. A copious serous discharge had begun without premonition the previous day, with tinnitus, fulness and increasing pain. Examination showed the meatus swollen and tender, with vesicles anteriorly and posteriorly near its bottom, hiding all beyond. The vesicles on rupture yielded abundant turbid serum, but no satisfactory view of the drum-head was obtained. Unusual local heat about the ear was noted, and the man was feeling very unwell. Cocaine and morphia were instilled after hot syringing, with some relief of the pain, a light insufflation of boric acid made, and hot syringing ordered in case of renewed suffering. He felt unable to leave his bed next morning, and increase of the local heat and swelling about the ear were found, but still no mastoid tenderness. In the evening the swelling had further increased, with unmistakable erysipelatous redness, but with little pain and free discharge. After a month of severe erysipelas, in which the other side of the head also was affected, he returned, the mere shadow of his former self. The discharge had long been purulent and free, and study now showed a large granulation mass half way out the posterior wall of the canal. Its removal was too painful to be thoroughly done at once, and it only gradually shrank under snaring and chromic cauterizations. The sinus beneath it could be followed directly backward for some 8 mm. into a considerable cavity with rough walls ; but no connection could be proven between it and a similar sinus at the back margin of the drum-membrane. The hearing was generally good, and tympanic involvement seemed very doubtful, as inflation never forced air or pus through either opening. Healing was complete in five months. His wounded hand was not involved in the erysipelas, and no source of infection could be ascertained.

NON-SURGICAL DISEASES OF THE OVARIES.

By William L. Taylor, M.D.,
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There is at the present day no more difficult question to decide, and hardly a more important one, than the advisability of surgical treatment in the many enlargements, prolapses, inflammations and painful conditions in general of the ovaries. No one should question the justice in the removal of a large ovarian cyst, or of a papillomatous ovary; but when it comes to a pelvic pain—ovarian, with a large interrogation mark—or even an acutely inflamed, painful, easily outlined ovary, it takes more than even a second thought to decide the question of surgical or non-surgical treatment. It is not always the wisest operator who displays the longest list of operative work. Better, by far, a longer list of patients saved, first, by careful diagnosis; second, by a far-sighted prognosis—not to jump to the conclusion of incurability too hastily—and third, by a conscientious, thorough course of treatment.

Every other woman, at least, who comes to the Women's Department, University Dispensary, suffers from some form of ovarian disease, a very small percentage of which is primary; that is, not caused by any extension from other tissues. Oöphoritis comprises about 50 per cent. of the cases, and it is a great temptation, in the absence of better cause, to ascribe this trouble to gonorrhœal infection. The morals of the average male would seem, in this enlightened age, to be at a very low ebb were we to take the numerous cases of ovaritis, or simple ovarian congestion, or pain alone, as evidence of his shortcomings. We are compelled to admit that an orchitis is not often due to strain or trauma, but know that its congener is frequently, if not generally, the direct or indirect result of non-specific and non-gonorrhœal causes. Among a class of patients socially and physically corrupt, where all the ills imaginable consort on equal terms, we are justly led to look upon many diseases of the genitalia with, at least, an eye of suspicion. Gonorrhœa in the male seems to be a normal condition, and in the female but a customary leucorrhœa. Here is the class of patients among whom we find the greater number of our surgical tubal and ovarian cases. A uterine and vaginal gleet, with a low-grade inflammation of the uterine appendages, is the condition we meet with, and one demanding for cure heroic treatment. But even among this moral and physical depravity it is not always absolutely certain that this septic poisoning is of gonorrhœal origin. Vaginas to which a douche is an unknown quantity must contain and circulate to the uterus and the peri-uterine tissues the poisonous germs of years of uncleanness. Especially would this be the case with women who are continually bearing children, without the shadow of antisepsis.

We know, however, there are patients to whom the ovaries are of greate account, and to whom procreation is a boon, and not a burden. Here the salva tion of the ovaries, and not their removal, should be the objective effort. And, fortunately, they seem more amenable to non-surgical treatment than in women of the lower classes. There is, first, less frequently a septic cause for the trouble; second, there is less degradation of tissues; third, there is better opportunity for the absolute sexual and general bodily rest so necessary in the treatment of these patients.

Coition has much to do with causing, and keeping up, excessive ovarian erethism and peri- or interstitial ovarian inflammation. Often in recently-married women the ovaries are found enlarged and painful, sometimes in an active inflammatory condition, or, more frequently, simply engorged and tender. Again, this is found in prostitutes as the result of excessive coitus, and is not always gonorrhœal.

Just before and during the menstrual flow much or all of the pelvic pain experienced by many women is due to this same congested state of the ovaries. And here let me say that a most common error is to subject these women to uterine treatment by dilatation of the cervix and intrauterine applications. There are two prime centres of menstrual pain—one the ovaries and the other the uterus. In these ovarian cases there is in the inter-menstrual periods but little, if any, local evidence of trouble, except, possibly, a slight uterine catarrh, which is of small account, and is not amenable to treatment except through the relief which may be obtained from the monthly over-engorgement. The monthly pain is of a different character from that due to an obstruction to the menstrual flow. It is a steady, continued ovarian pain, "wearing" or "sickening" in character. In obstructive dysmenorrhœa, particularly in cervical stenosis from very acute flexure, the pain is intermittent, and is relieved *only* by overstretching the canal. Such treatment in ovarian pain would be apt to add to the uterine and ovarian congestion.

Ovarian prolapse may result from one of the conditions before mentioned, but usually it is the result, or, at least, the accompaniment, of a hypertrophied, prolapsed and retroflexed uterus. Those ovaries impacted between uterus and rectum give rise to an inordinate amount of suffering. Every jolt which the pelvic organs may receive and every effort at defecation make the pain more intense. Ultimately, if not already enlarged, they become so, and we have increased misery. Here seems a prime condition for oöphorectomy, and would, without doubt, be so were it not for the possibilities and probabilities of minor gynecology.

Mrs. S., aged 28, married two months. Complains of pain in left ovarian region. This has been increasing since one month after marriage. She was perfectly well before. Now she has slight fever, with well-marked enlargement and tenderness of left ovary. The right is not enlarged, and is but very slightly tender. There has been no leucorrhœal discharge. Menses normal. Suspecting gonorrhœal infection, I closely questioned the husband, and became satisfied that he had not contracted either gonorrhœa or syphilis. The evidence of excessive coitus was clearly given, and to this I ascribed my patient's condition.

The object of treatment here was two-fold: First, to relieve the ovarian inflammation; and, second, to prevent adhesions from binding down the ovary in a prolapsed position.

The ovary was so tender that advice as to sexual rest for at least a short period was hardly necessary. But that was an important part of the treatment to be observed for at least one month after recovery. To deplete, and at the same time support the ovary, I used a tampon of glycerole of tannin, ʒj to ℥j, with the addition of gr. v ex. opii aq. to each f℥, using to each tampon about fʒij to f℥ss. This tampon I preferred to a suppository, for the reason that I got the support, the action of the glycerine and the sedative combined. I used, also, prepared wool instead of non-absorbent cotton. Wool is more elastic, and will remain perfectly fresh in the vagina for three or four days. But in our patient these tampons were renewed every day for five days, when the tenderness had subsided sufficiently to warrant their suspension. I then used every second day a mild galvanic current followed by a plain wool pessary. Beside a saline laxative, no medicine was given by the mouth.

After three weeks no enlargement of the ovary could be felt, or, more truly, that organ could not be outlined at all, and the tenderness was hardly appreciable.

Had this condition been allowed to run on we would in a few months' time have had an adherent ovary, prolapsed and painful, to be enucleated and amputated and placed on the list of cases of specific oöphoritis and salpingitis.

This is not a rare condition, but one of most frequent occurrence from a most prolific cause. I have often seen to a less degree this same tenderness and swelling of the ovary as the result of intrauterine applications, where the uterus has been abnormally sensitive. Here, though the uterine appendages have all been involved in the same congestion, the tenderness and pain subsiding upon the substitution of tamponment for intrauterine medication.

Mrs. F., aged 25, one child five years ago: never had menstrual pain until about one year after birth of child. Commenced then as a slight "boring" in the left ovarian region, which appeared just before an expected period and subsided when the flow was freely established. In the course of treatment this was cured, but returned several months ago with increased severity. The pain now, as before, is transient, but much more severe.

The first examination was made one week after the menstrual flow, and no uterine, or peri-uterine lesion was noted. The diagnosis of neurasthenia was given, and a tonic of strychnia and iron was administered. The patient failed to return for two weeks, or about three days before the date upon which she expected menstruation. The pain was just then commencing, and, notwithstanding our tonic, threatened to be fully as severe as at any previous time. Examination now revealed the left ovary enlarged to fully twice its normal size, and pressure left no doubt that it was the seat of pain. This same change I found, by frequent examinations, to occur at every period, and was aborted by full doses of bromide and thorough scarification of the cervix uteri. After several months of treatment, the patient was discharged, having had no trouble for three consecutive periods.

Mrs. H., aged 24; one child, four years old. Complained of leucorrhœa, backache and pelvic fulness. Examination revealed severe laceration of cervix uteri, large subinvoluted uterus slightly prolapsed and retrodisplaced. I operated upon the cervix uteri in May, 1890, and the patient was relieved of all evidence of local disease.

In the latter part of August she returned for treatment, having severe pelvic pain and abdominal soreness. She looked pale and cachectic, and had temperature of between 99° and 100°.

Examination.—Found uterus much congested, with excessive peri-uterine tenderness, worse on the left side. On that side there was a very tender body, the ovary, surrounded by a softer linear body, which was thought to be the tube containing pus. On the right side there was not much evidence of disease at that time. Operative interference seemed inevitable, but, after favoring it, I reconsidered my opinion and sent her home to rest a couple of days in bed with suppositories of morphia, belladonna and tannin, and a bromide mixture. She returned relieved of fever, but with the same fulness and tenderness. Tampons of glycerole of tannin were then applied every day for five days, when the condition had so improved

as to permit a thorough pelvic examination. Rapidly the fulness on the left side disappeared, until now the only apparent trouble is to the right side, which has developed a very slight fulness and tenderness. By the mouth she had been taking the corrosive chloride of mercury with potassium iodide.

How strong is the possibility of frequent recurrence of oöphoritis in this patient, with the ultimate formation of an abscess, can be judged by the histories of similar cases. If this woman's social surroundings will enable her to be at rest for several months—say four to eight—until all tenderness and fulness have disappeared, I do not see why there should be any greater predisposition to recurrence than there was to the original attack. It is true that these ovaries often remain the centres of pain and undergo degenerative change, ultimately necessitating their removal, but a lack of early minor gynecological treatment is accountable for this change in a large percentage of cases.

Mrs. W., aged 39, five children and one miscarriage. She has sacral pain and pelvic dragging. Defecation is very painful, the pain being of a throbbing character. Walking is painful, and especially so is riding over rough roads.

Examination.—Uterus in second stage of prolapse, with cervix just about one inch from outlet. Fundus retroflexed and enlarged. Between it and the rectum, and to the left, is a tender oval body which is freely movable, as is also the body of the uterus. This tender oval body is the ovary, and when pressed upon causes the sickening, throbbing pain, especially when the bowel is filled with feces.

As long as this ovary is prolapsed just so long will it remain enlarged and painful, despite systemic treatment. What we must do is to replace the prolapsed and retroflexed uterus and insert a pessary of the right size and shape. If the ovary is too tender to bear the impact of the hard rubber pessary, then first use a wool pessary. But, as a rule, the ovary will not be in the way if the uterus is replaced properly.

Where there is fixation the treatment will not be so simple, inasmuch as the uterus and ovary must be separated from mass of lymph, sometimes well organized.

SHAMANISTIC PRACTICES.[1]

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Primitive man fills his world with an infinite number of invisible beings, both good and bad; the former partaking of the characteristic shapes of the animate forms constituting the fauna with which he is familiar, while the latter are generally of abnormal or mythically hideous aspect. The benevolent spirits, designated by the various tribes of the Algonkian family of Indians as *manidos*, are beneficial to and favorably disposed toward man, whereas the *malevolent manidos* are constantly antagonistic, and frequently enter and take possession of the person of an Indian, when their presence becomes appreciable to the victim by pains, cutaneous eruptions, or even fractures. The remedy, consequently, is the utilization or administration of a course of medication, exorcism and incantation which shall prove sufficiently offensive to the demon to compel him to relinquish his possession of the sufferer and take flight. Success, however, depends upon the status and reputed ability of the "medicine man" and the efficacy of his charmed remedies.

Before attempting to describe the course of procedure adopted by a typical "medicine man," or, more properly speaking, *Shaman*, it may be necessary to state that there are at present about 225 tribes of Indians living within the borders of the public domain, which tribes have been relegated to fifty-six linguistic families or stocks possessing characteristic and distinct planes of intellectual development. Some of these tribes have for several centuries been in almost uninterrupted communication with the whites, thereby gaining considerable information relative to the proper use of herbs and the treatment of injuries; but among the greater number the primitive beliefs and customs survive to greater or less extent, and it is only among some of these that the anthropologist is enabled to prosecute investigation with any amount of interest and success.

The area of country formerly occupied by the numerous tribes constituting the Algonkian linguistic stock extends from Nova Scotia southward to the James River, and westward to Montana. To this divison belong the tribes first met with by the French in Canada, by the Puritans in Massachusetts, and by Captain John Smith's band of colonists in Virginia. Intellectually they are believed to be considerably in advance of the tribes of most other divisions, and one of the most interesting bodies, from an ethnologic point of view, is the Ojibwa or Chippewa tribe, of the Lake Superior region. Some of the bands of this tribe located in the timbered portion of northern Minnesota have, as yet, held no social intercourse with their white neighbors, and consequently maintain

[1] Read before the Berks County Medical Society.

their primitive and intricate social relations and government; preserve their ancient traditions of the Ojibwa cosmogony and genesis, and the myths and pictographic charts pertaining to the *midéwiwin*, or so-called "Grand Medicine Society," which rite, it is affirmed, was granted them by the Great Spirit through the intermediary of a mythic anthropomorphic personage or spirit called *Minabozho*. By means of this divine gift the Indians were enabled to provide themselves with the necessaries of life, to ward off disease and to counteract the aggressive attacks of malevolent manidos. Minabozho also gave them the sacred rattle, to be used at the side of the sick; the sacred, or medicine, drum, to be used during the ceremonial of initiation and at death; and tobacco, to be employed in invocations and in making peace.

The method pursued by Minabozho when conferring upon the Indians this sacred rite is at this day dramatically rehearsed at the initiation of a candidate into the society of the *Midé* or *Shamans*. Such as are enabled to gain admission are taught the traditional origin, properties and uses of plants which are believed to expel from the sufferer the demons of disease. It would be inappropriate in this connection to review at length the complicated course of preliminary instruction which a candidate is obliged to pursue, the songs which he is compelled to hear, in which the preceptor extols the virtue and power of the special remedies for which he is distinguished; the course of procedure at the sudatory just previous to his presentation for initiation; and the interesting and impressive ceremonial of initiation itself, which continues for one entire day for each of the four degrees.

One who has thus been admitted into the society is designated a *Midé*, and as he advances by taking other and higher degrees, his powers are correspondingly augmented, and the superstitious and credulous Indians hold him in greater fear and reverence.

There are two other classes of mystery-men among the Ojibwa, individuals *not* united as the above, but operating singly and independently of one another. One is known as the *Jĕssakkĭd* or Juggler; the other, the *Wâbĕno*. The latter word means literally, *easterner* or *daylight* man, because his orgies are conducted only at night, and terminate at the approach of day.

The Juggler is the true prophet. He foretells events concerning the tribe, or of individuals; he is a contortionist and an impostor, and pretends to invoke the aid of malevolent spirits to aid him in his performances. He is also consulted when one has an enemy, or a rival, to cause the latter to be afflicted with a demon or even to compass his destruction. The performances of some of the most renowned jugglers are truly mystifying, even to the intelligent and incredulous observer; and it is not at all surprising that the Jesuit Relations and other early reports pertaining to the northwest tribes contain extended and wonderful accounts of the powers possessed by such personages.

The *Wâbĕno*, being also familiar with a limited list of remedies, is more especially devoted to the preparation of love philters, hunters' medicines and fetishes, charms, etc. He sometimes supplies the means of destroying life, by furnishing poisons to those who are able to remunerate him. Both the *Jĕssakĭd* and the *Wâbĕno* are looked upon by the Indians as "bad-medicine men" or

adepts in the knowledge and use of "bad medicines." The Midé, by virtue of his higher powers, is generally called upon to counteract the spells and charms of his antagonists.

On account of the fear and reverence in which these professors of magic are held in the estimation of the tribe at large, they are enabled to control the actions of the executive, and war chiefs, and frequently, through the proclamation of pretended visions and prophecies, cause a tribe to become involved with the authorities, as we have examples in the person of Sitting Bull, of the Sioux nation, and Sword Bearer, of another neighboring tribe. Neither of these men are chiefs in any sense of the word, excepting in so far that they are chiefs of classes of "medicine men" to which they belong.

There is a fourth class of pretenders among the Ojibwa, termed *Mashkíki Kéwinini*, literally, medicine men who confine themselves to the administration of infusions and decoctions. This class, however, are always members of the "Grand Medicine Society," and are, therefore, more accurately speaking, specialists.

The manner of treatment consists in first locating in the body of a patient the demon supposed to be the direct cause of illness. This is done by singing medicine songs, as they are designated, and by employing the rattle as an accompaniment. The operator, or singer, proclaims in this manner his power to exorcise the demon, and the injury he will inflict upon him if he fails to depart. Should the pain be located, it would at once be an opportunity for the Shaman to apply his lips and to attempt to remove the exciting cause by sucking. A clever performer has been known to secrete about his person young mice and pretend to suck them from the affected part, thus affording visible proof to the sufferer or his friends. I have known a juggler to employ four or five pieces of the leg bones of the wild turkey, each piece being about four inches in length, and after all the pieces had been apparently pushed down his own throat, and permitting the last one to protrude a short distance from the mouth, he would apply the end to the affected part and pretend with great effort and frequent contortions to remove the illness by sucking. After securing the demon, the bones were ejected from the mouth, and having passed through an attack of violent retching, a highly-colored liquid was observed to flow from his mouth into a dish of clear water. The coloration had been produced by chewing roots, and was intended as an evidence that the poisonous substance had been removed from the patient.

The medicines which are then given to the patient are intended to take the part of a prophylactic. Chronic headache, neuralgia and toothache are frequently treated by tattooing over the affected part. This consists of pricking the skin with sharp splinters of bone, or needles, and rubbing upon the surface finely powdered charcoal, soot, or vermilion.

A practice common to the Indians generally is frequently, and upon the slightest pretext, to indulge in vapor baths. The sudatory is resorted to at the approach of any indisposition whatsoever, and after undergoing the "sweating ordeal" the patient will immediately plunge into a neighboring stream or pond.

This has been observed among the Sioux, with no apparently injurious results when the thermometer registered ten degrees below zero.

Abortion is prevalent among the Sioux, Crows and other allied tribes. They claim to derive satisfactory results by administering a mass consisting of hair selected from the tips of the tail of the black-tailed deer, chopped very fine and mixed with the fat taken from a bear's paw. Another practice is for an Indian medicine woman to take the patient upon her lap, pass her arms about the latter's abdomen and press it with all her strength. Newly-born infants are dipped or washed in cold water, the placenta being deposited in a cow-skin pouch and tied to the branches of a shrub or low tree. This, it is said, is to prevent its being devoured by dogs, and to mark the spot of the child's birth so that it may later in life point to the tree as closely connected with itself.

Until quite recently the Coyotéro Apaches of Eastern Arizona practised a curious custom. The patient was placed with her back against a tree, her hands and arms extended above her head and there secured by cords. In this standing posture she was permitted to remain until the child was born or death came to her relief.

Among the Chinooks the receding forehead was a mark of distinction, as slaves were not permitted to flatten the heads of their offspring. The cradle-board was lined with mosses and buckskin, the child was laid upon its back and a short board attached to the head of the cradle-board was brought down so as to depress the frontal bone, and then secured by means of buckskin thongs. The forehead was also protected by a small pad of moss placed upon it before securing the head-board permanently.

Indians sometimes operate upon themselves in case of serious gun-shot injuries of the extremities, or comminuted fractures. The instrument in such cases consists of a hatchet, or a large knife. The Coyotéro Apaches employ a splint which is well worth mentioning. The appliance which I was shown had been used by a warrior in a case of comminuted fracture of the humerus. It consisted of a number of strips of cedar wood, each of which was about a quarter of an inch thick, three-fourths of an inch wide and about six inches long. The strips were arranged parallel to one another, though not in contact, and thus permanently secured by passing thin bands of sinew above and beneath each piece and taking a twist or two of the cord before securing the next strip. Only two sets of sinews were thus employed, one near each end of the splint, which had then been tied about the arm, thus permitting free discharge and frequent bathing.

Self-mutilation is practised by the Cheyennes after a successful raid, when the forearm is gashed by making transverse cuts. This is done as a religious rite and an offering to the person's own tutellary daimon; and by the Crows when one or more fingers are deliberately severed from the hand as a mark of mourning for the dead.

The Aigaluxamūt Innuit of Southern Alaska excise syphilitic ulcers after wading into water deep enough to cover the affected part. Death from hemorrhage frequently results. The operation is believed to be particularly efficacious when the sufferer can secure the service as operator of the person from whom the

disease was contracted, though among these people certainty of identification is exceedingly doubtful. The Mojaves, of Arizona, resort to the saline efflorescence found upon the dry mud of the Colorado River. This is carefully scraped together and eaten, though with no perceptible beneficial results. The deposit was found to consist chifly of salt, soda, borax, and lime, resulting from the evaporation of the water as the river continues to fall during the summer months.

Among the Hualpais, of the high plateaus of northern Arizona, it has, until quite recently, been necessary for the "medicine man" to specify in advance the number of days required for him to cure the patient. Three successive failures would cause the death of the pretender; therefore, the prognosis was invariably fatal to the patient unless the complaint was of the simplest character. Similar practices prevailed among other peoples, and Sir John Lubbock says of the Macas Indians, of Equador, that if the doctors' remedies fail to effect a cure they are sometimes put to death themselves. Lieutenant Musters, R. N., in speaking of the Patagonians proper, remarked that the position of wizard or doctor is not a very desirable one, as in the event of his prognosticating a success in a war expedition, or cessation in sickness, or any other event, which is not realized, the chief will not unfrequently have him killed.

Smallpox is greatly dreaded, and many of the Sioux have been known to commit suicide by drowning when they imagined themselves afflicted with the premonitory symptoms of that disease. The Paviotso, of southern Nevada, at one time deliberately killed and buried quite a number of their tribe who were affected in a similar manner.

Snake bites are usually treated by applying poultices consisting of crushed roots and leaves of plants, and the Delawares claim success by burning upon the wound a small quantity of gunpowder.

Although the Indians in general are less sensitive to pain than the Caucasian race, they are easily alarmed at the appearance of an epidemic, and instead of adopting preventive measures will almost invariably begin to fast and practise ceremonies whereby to appease the angry spirits, thus reducing the system and making the subject an easy prey to disease. I have seen the bravest warrior of the Sioux blanch at the appearance of blood from the cut of a penknife, when this same individual bore upon his person the scars of wounds either one of which would undoubtedly have been fatal to a white man. Gall, the famous war chief of the hostile Sioux, was bayoneted to the earth, the weapons passing through both sides of the thorax, and less than half an hour later was on his way to rejoin a body of his warriors 200 miles distant. This was accomplished on foot, in less than five days, and when the thermometer registered at zero. This is an instance of phenomenal physical endurance, and is probably without a parallel in the modern history of the Indians.

The Indian medicine man's fee consists of money, peltries, and certain proportions of game procured by the patient or members of his family. Such indebtedness is generally liquidated without delay, the debtor fearing a recurrence of the disease, or, perhaps, even a greater affliction which, it is feared, might be wrought by an angry or dissatisfied Shaman. The Kawía medicine

man has a delicate way of reminding a delinquent patient of his negligence. Short thin pieces of wood are prepared, around one end of each of which is painted a band of color, or a slight wrapping of colored porcupine quills; these are carried by the Shaman, and whenever he happens to pass the habitation of his debtor the Shaman will quietly throw into the building one of the sticks as a reminder or notification. The delinquent, to cease the public persecution, soon gathers together the sticks and returns them to his doctor together with the fee previously agreed upon.

In the selection of plants the Ojibwa Shaman is governed by sacred motives. Each species was made and provided for the Indian, for a specific purpose, and the explanation is always found in a myth. The Great Spirit planted them in the body of *Nokomis*, or mother earth, and when digging roots a pinch of tobacco is deposited in the cavity as an offering to her, while a ceremonial smoke is indulged in and fumes of the cherished narcotic are puffed to the four cardinal points, toward the abode of *Kitshí Manido*—the Great Spirit—and toward the earth. Plants are also selected according to the color of the roots, leaves, or fruit, as well as their form and taste. The most highly prized is ginseng, and bifurcated roots command a high price. On account of its suggesting the human form it is known as man-root, and its mythic origin is given as follows:

Once an old Shaman, with his wife and son, started out on a hunting trip, and, as the autumn was changing into winter, the three erected a substantial wigwam. The snow began to fall and the cold increased, so they decided to remain and eat of their stores—game having been abundant and a good supply having been secured.

The son sickened and died. Whereupon his mother immediately set out for the village to secure help for his restoration to life, as she believed her father able to accomplish this, he being the chief priest of the Grand Medicine Society. When the woman informed her father of the death of her son, her brother, who was present, immediately set out in advance to render assistance. The chief priest then summoned three assistant Shamans, and they accompanied his daughter to where the body of his dead grandson lay upon the floor of the wigwam, covered with a blanket.

The chief Shaman placed himself at the left shoulder of the dead boy, the next in rank on the right, while the two other assistants stationed themselves at the feet. Then the youngest Shaman—he at the right foot of the deceased—began to chant a medicine or sacred song, which he repeated a second, a third and a fourth time.

When he had finished, the Shaman at the left foot sang a Midē, or medicine song, four times. Then the Shaman at the right shoulder of the body did the same, after which the chief priest sang his song four times. Whereupon there was a perceptible movement under the blanket, and as the limbs began to move the blanket was taken off, when the boy sat up, but was unable to speak. He made a sign by thrusting his curved index finger downward before his chin, to indicate that he desired water, which was given to him.

The four Shamans then chanted, each preparing charmed remedies, which were to be given to the boy to complete his recovery. The youngest Shaman, standing at the right foot of the patient, gave him four pinches of powder, which he was made to swallow; the Shaman at the left foot did the same. Then the Shaman at the right shoulder did likewise, and he was, in turn, followed by the chief priest, standing at the left shoulder of the boy. Whereupon the latter immediately recovered his speech, and said that during the time that his body had been in a trance, his spirit had been in the Spirit Land, and had learned of the Grand Medicine.

I will omit the original text, but will render into English the literal phraseology of the statement alleged to have been uttered by the boy. It is as follows:

"He, the Medicine Spirit, gave us [the Ojibwa] the Grand Medicine, and he has taught us how to use it. I have come back. There will be twelve, all of whom will take wives. When the last of these is no longer without a wife, then will I die. That is the time. The Medicine Spirit taught us to do right. He gave us life, and told us how to prolong it. These things he taught us, and gave us roots for medicine. I give you medicine—a root. If your head is sick, this medicine put on. You will put it on."

This is the Midē belief respecting the origin of ginseng.

In the above, the reference to twelve—three times four, the number four being sacred with the Ojibwa—signifies that twelve chief priests shall succeed each other before death will come to the narrator. In the original text are a number of archaic words and forms of pronunciation, which indicate considerable antiquity of the tradition as preserved by the Ojibwa.

MEMORANDA.

CLINICAL NOTES IN RESPIRATORY THERAPEUTICS.

III.

Continuous Inhalation from the Yeo Respirator.

One of the most useful, as it is one of the simplest, devices for the inspiration of medicinal vapors is the little perforated zinc respirator devised by Dr. J. Burney Yeo, of London, and described by him in the *British Medical Journal*, July 1st, 1882.

In New York, through no fault I am sure, of my friend Dr. Beverly Robinson—this little instrument is erroneously called "Robinson's Inhaler." It is, however, as already stated, the device of Dr. Burney Yeo, of London. Prof. J. Solis-Cohen and I began using it immediately after Dr. Yeo's publication, and our results after two years' experience were reported by me in *The Medical News*, October 11th, 1884.

It is, as will be seen from the illustration, simply a little cage of perforated zinc bound with cloth or chamois-skin, carrying a sponge and fitted with elastic loops to attach it around the ears, so that it fits over the nose and mouth. The respired air becomes impregnated with the vapor of any volatile medicament dropped upon the sponge; and as the little machine, being light and cleanly, can be worn for prolonged periods, a continuous medication of the respiratory tract is thus effected. The apparatus was first made for us after a

pattern kindly forwarded by Dr. Yeo, and I am informed that thousands of them have been sent all over the United States and Canada since our report in 1884 made the profession on this side of the water acquainted with Dr. Yeo's most admirable device.

Specimen formulæ of the solutions most generally useful are as follows :

℞ Creasoti (Beechwood),
Eucalyptol (puriss.),
Terebenis,
Chloroformi, āā f℥ij. M.

Sig.—For inhalation, twenty drops to be placed on sponge of Yeo respirator and renewed as necessary.

℞ Thymol, ℥j
Alcohol,
Spts. chloroformi, āā f℥iv. M.

Sig.—For inhalation, ten to fifteen drops on sponge of Yeo respirator, etc.

Among other medicaments which may be used singly or in combination, are alcoholic solutions of menthol, compound tincture of benzoin, oil of turpentine, oil of pine, (sylvestris or pumilon), and, indeed, all terebinthinates, balsamics and essential oils. A very useful drug for inhalation in this way is ethyl iodide. It may be used singly or in combination. A favorite formula in the Medical Clinic of the Jefferson Medical College Hospital, during my term of service there, was the following :

℞ Creasoti (Beechwood),
Ethyli iodidi,
Terebenis,
Alcohol, āā f℥ij. M.

Sig.—For inhalation, twenty drops on sponge of Yeo respirator.

In cases of syphilitic disease of any portion of the air passages ethyl iodide is particularly applicable, but it is often of great use in non-syphilitic phthisis, in simple bronchitis, in bronchorrhœa and in chronic catarrhal pneumonia. It may produce systemic effects, even iodism, if pushed sufficiently. Creasote and thymol find their principal indication in phthisis. Terebene, eucalyptol and the like, are useful in subacute and chronic bronchitis ; and when used in phthisis their principal benefit is from their influence upon collateral inflammations. Compound tincture of benzoin is advantageous in acute cases of bronchitis and laryngitis, but steam inhalations are to be preferred in acute conditions, as set forth in the first of this series of clinical notes. Alcohol is used as a solvent and diluent. Chloroform and its solution in alcohol are useful in allaying irritative cough, and in mitigating the sharpness of the more pungent vapors—thymol, eucalyptol, menthol, and some specimens of terebene. In some cases chloroform alone may be employed, especially at night, to secure relief from useless cough which prevents sleep. From five to fifteen drops is usually a sufficient dose.

In making use of the respirator the sponge should be moistened with warm water, all excess of water being removed by squeezing. The medicinal liquor s then dropped upon it, and need rarely be renewed in less than eight or ten

hours, sometimes not for twelve hours. The respirator should be worn as often as possible during the twenty-four hours, and as long as possible at a time. Many patients can comfortably sleep with the respirator in position. The object is to secure a mild and continuous topical medication.

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POTTS' DISEASE TREATED BY CONTINUED EXTENSION.

J. G., aged 13 years, was a sturdy lad up to January, 1889. Some members of his father's family had died of consumption, but no form of tuberculosis had manifested itself in either his brothers (two) or his sister. About the date given above, he complained of loss of appetite, and colicky pains in the stomach. At the same time he became languid and averse to physical exercise, and lost weight rapidly. In a month all the symptoms of Potts' disease were well developed, and the patient was treated by plaster of Paris jackets and braces, supplemented by the administration of tonics, stimulants and nourishing diet. His condition steadily grew worse till the middle of July, 1889, when I first saw him. He was then pale and very much emaciated, suffered from a slight hacking cough, and could neither stand nor walk, except when supported by braces, and then only with great pain and difficulty. There was a marked backward projection of the eleventh and twelfth dorsal and the first lumbar vertebræ. A plaster jacket was applied at once. Incorporated in it were the extremities of two pieces of bandage, so arranged that two long loops were provided, after the bandage hardened, extending upward from the shoulders. These loops were fastened to the ends of a cross-piece as wide as the shoulders. To the centre of this cross-piece was secured a cord, which was carried through a hole bored in the head-board of his bed. On the swinging end of the cord was fastened a weight of thirty-six pounds. Counter extension was secured by elevating the head of the bed four inches. In this way extension was kept up day and night; the bandages incorporated in the accurately-fitting plaster so diffusing the tension that there was no injurious pressure upon any one point. This permanent extension was further supplemented by intermittent extension thus arranged: In the middle of a piece of bandage, three inches wide and four feet long, a longitudinal slit was torn of sufficient extent when opened to admit the head. On the head being slipped through this slit, traction upon the two ends of the bandage in the direction of the long axis of the body caused one portion to catch under the chin, the other under the occiput. In this way a sling for the head was provided, which, after careful padding at the points of pressure, permitted of an extension of thirty pounds for five minutes six times each day, without giving the patient pain. From the first day extension was applied the patient was entirely relieved of his sharp pains. He was kept under this treatment for six months, the parents most intelligently following out my directions. At the end of this time the continued extension was omitted, extension of the head six times a day being continued for two more months. For three months more the head extension was continued three times a day. Then all treatment, except the administration of cod liver oil emulsion and the continuance of a light plaster jacket, was omitted. As the result of the treatment the lad has become perfectly well. He attends school, and runs and plays exactly as do his comrades. He has gained twenty-one pounds in weight.

Since Dr. S. Weir Mitchell read before the College of Physicians of Philadelphia his most important paper upon the treatment of Potts' disease by per-

manent extension, I have endeavored to apply this method to all cases which did not yield to simple splinting and support. The results have been eminently satisfactory where the method was fairly tested. The application of extension by means of a plaster jacket was suggested by Professor H. C. Wood.

The case detailed above is an example of what can be done among poor people, and without apparatus. The plaster jackets were renewed every five weeks. The lad was suspended by means of a bandage head sling, this being attached to a cane, the extremities of which he grasped with his hands. To the cane was fastened a cord running through a loop secured to a gas pipe in the ceiling. One of the great difficulties in treating such cases at their homes lies in the fact that months, or even years, are required to accomplish a cure. Few patients are blessed with families of sufficiently persevering nature to persist for such a length of time in a treatment which they do not understand, and toward which they are from the beginning often antagonistic. Unless the patient and his friends have full confidence in the method, and fully understand that no definite time can be set for a cure, or even for improvement, there is little use in attempting home treatment.

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A CASE OF EXTENSIVE LACERATION AND CONTUSION OF THE RIGHT LEG.

H. G., aged 15 years, was admitted to the University Hospital September 8th, 1890, with the following history:

That afternoon he attempted to jump on a moving freight train. He succeeded in getting a purchase for his left foot, but did not for the right one; the latter was dragged for some distance until it was caught by what the patient thinks was a switch, which pulled him off the train and threw him partially under the car, one wheel of which passed over the leg, parallel to the tibia and just posterior to it, without fracturing either of the bones of the leg.

The wound was twelve inches long and eight wide, the lateral flaps having the appearance of being laid open and flattened out. The muscles were all torn from around the bone, and not only were they entirely separated from each other, but all those of the calf were lacerated transversely, some being entirely severed. The posterior tibial artery was exposed nearly the entire length of the wound, as was also the tibia. The tibial periosteum was torn in several places. The skin and subcutaneous connective tissue and fat were entirely separated from the deep fascia around the entire leg, not only to the length of the wound, but above and below the external opening, forming deep pockets. The pocket at the upper part extended several inches above the external condyle of the femur, and was large enough to receive the entire hand. Placing a hand at either side of the wound beneath the skin and upon the deep fascia, the fingers met and could be passed up and down to the distance just mentioned.

The leg was thoroughly washed and all ragged ends of muscles and fascia were trimmed away; each muscle was sponged and gently rubbed with a solution of 1–500 bichloride to remove particles of dirt which simple irrigating might fail to reach; this was

likewise done to the entire wound-surface, including the pockets. Then followed thorough flushing with 1–4000 bichloride solution. In stitching muscles, fascia, periosteum, etc., fine chromacized catgut was used, which was sterilized at the time by boiling in alcohol. The wound was drained very thoroughly. One large tube was placed in the deepest part of the wound just beside the posterior tibial artery. Another was passed from the internal condyle, between the skin and deep fascia, diagonally around the posterior part of the leg, and a counter opening was made above and posterior to the external malleolus. Another was put in the large pocket around the external condyle and brought out in the line of the wound.

The transversely divided muscles were then stitched with the catgut which had just been prepared, the torn periosteum was approximated, and afterwards the muscles were brought back layer by layer and loosely stitched in place. The wound in the skin was not approximated but left gaping about an inch throughout its entire length, being held in place by about half a dozen sutures of silk-worm gut. The limb was loosely wrapped in wet bichloride gauze and constantly irrigated with a 1–10,000 bichloride solution.

The leg was subsequently dressed every day. On the third day a patch about the size of the hand at the middle of the calf assumed the grayish hue of the first stages of gangrene; it rapidly formed a line of demarcation and sloughed, but was found not to extend beneath the deep fascia. This patch subsequently extended posteriorly around the calf to the other edge of the wound, with the same result as before. At no time during the sloughing process was there any pus passed from the drainage tubes, but only minute fragments of tissue, evidently from the torn and devitalized shreds of muscle, nor was there ever the slightest odor about the wound notwithstanding the extensive externa sloughing.

Constant irrigation was kept up until October 2d, when all the sloughs had separated and most of the wound was granulating. A few days later the two drainage tubes in the superficial parts of the wound were removed. After irrigation was stopped the wound was dressed with the ordinary protective and bichloride gauze, no iodoform being used on account of such a large absorbing surface being exposed. As the surface commenced to granulate, pus began to be secreted, but apparently only from the surface granulations. Peroxide of hydrogen sprayed once daily on the parts greatly diminished this purulent discharge which, it is interesting to note, has always remained pure and odorless. His temperature has had daily fluctuations of about three degrees, several times reaching 102.5°.

He has had a full nutritious diet, also quinine and stimulants several times a day.

His condition to-day, October 7th, 1890, is as follows: His leg has the normal contour and all denuded surfaces are entirely covered with granulations excepting one small spot on the tibia. He bids fair to make a good recovery and even to have considerable muscular power in his leg. His left foot did not escape injury, a compound fracture of the great toe and a simple fracture of the fifth metatarsal bone being found. It was greatly swollen and dark, and the cellular tissue of the entire foot and ankle were puffed out with extravasated blood. Under treatment this injury has entirely recovered.

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CLINICAL DEPARTMENT.

MEDICAL DISPENSARY, UNIVERSITY HOSPITAL.

SUPPLEMENTARY NOTE ON THE DIAGNOSTIC VALUE OF TUBERCLE BACILLI IN SPUTA.

[Service of Dr. M. Howard Fussell.]

In 1887 Dr. Fussell read a paper before the Philadelphia County Medical Society, based on the examination of the sputa of 100 cases of lung disease. The conclusions arrived at were: That the presence of tubercle bacilli in the sputa of any given case was undoubted proof of tuberculous phthisis, and that the continued absence of the organisms from the sputa of any given case was good, though not positive, proof of the *absence* of phthisis.

These conclusions are confirmed by us in the examination of the sputa of sixty-five cases in the medical dispensary since January, 1890.

Of these sixty-five cases, forty-four had undoubted physical signs of phthisis, and tubercle bacilli were present in the sputa of all.

Four had doubtful physical signs, and tubercle bacilli were found in the sputa of all.

Eight had no physical signs of phthisis, and tubercle bacilli were *absent* from all.

Nine had doubtful physical signs, and tubercle bacilli were absent from all.

The four cases which had signs insufficient to pronounce phthisis present, and in which tubercle bacilli were found, are of sufficient interest to be briefly noticed.

Case I.—Mary S., a dwarf, aged 27 years, measuring thirty-eight inches in height. Complained of pains in chest, constant pulmonary hemorrhage and continued loss of flesh. Repeated physical examinations failed to elicit any signs save a very slight dulness at right apex. The case has progressed as one of phthisis.

Case II.—J. W., aged 28; had been exposed to the flood in Johnstown. There was much loss of flesh, with a general bronchitis, but no signs of consolidation, except a higher-pitched resonance at right apex, with expiration slightly prolonged. The case did badly, however, and in a few weeks undoubted signs of consolidation of right apex made their appearance.

Case III.—Henry Stanly, aged 35. Progressive failure in strength and loss of flesh, with night sweats and daily rise of temperature. The only physical signs present were a few crackles, with higher-pitched resonance over left nipple. The man continued to fail, but no more definite signs appeared for several months, though tubercle bacilli were early demonstrated. When last seen, the whole left apex was involved.

Case IV.—This was an example of rapid consolidation of right apex, which simulated a croupous pneumonia, but tubercle bacilli were demonstrated at the second or third visit, and the case progressed as a case of phthisis.

The nine cases in which the signs were doubtful, and tubercle bacilli absent, are full of interest, but space prevents their extended notice. Two were cases of pneumonia, one of the apex in a boy with Potts' disease, where phthisis was

feared, but who has entirely recovered. Another of the cases did not take the usual course of pneumonia, but has completely recovered. There was a case of pleurisy; one of anæmia, with cough, etc. In all these cases it was a great relief to us when repeated examinations failed to demonstrate bacilli.

That the ground "absence of tubercle bacilli is good, though not positive, proof of absence of phthisis" is well taken is proven by one of our cases in group one. This case was quoted in Dr. Fussell's article as one with doubtful signs, absence of bacilli and recovery. In 1887 he had been under observation for one year, and seemed entirely well, but in 1889 he again came under observation, with marked consolidation of left apex, numerous bacilli in sputum and death early this year.

Wherever the examinations were made near the ending of the case, tubercle bacilli were much more numerous than in an ordinary case.

In conclusion, we would urge a more general use of this means of diagnosis in diseases of the chest. It is comforting in the plainest cases to state positively that the consolidation is tuberculous, that a prognosis more grave can be given. It is doubly comforting to be able to prevent ourselves from saying, "Nothing is the matter," when deep-seated trouble exists which cannot be demonstrated, but which will surely make a later appearance.

The technique is simple, does not require much technical knowledge, and but a moderately powerful microscope. A satisfactory method is described in the article above referred to, which is published in Vol. VIII of the "Transactions of the Philadelphia County Medical Society."

M. Howard Fussell, M.D.,
James W. Keily, M.D.

PHILADELPHIA HOSPITAL.

REPORT OF A CASE OF URÆMIA, WITH LOCALIZED CEREBRAL CONGESTION.

[Service of Dr. William E. Hughes.]

T. B., aged 37, was admitted June 6th, 1890, at 11 A. M., in an unconscious condition The history obtained by the ambulance surgeon from the people in the house where the man had been staying was that he had been drinking heavily for two weeks, and that early on the night of the 5th he became unconscious and began to have convulsions. These convulsions continued, at short intervals, during the night and next morning up to the time the ambulance arrived. He had three attacks while *en route* in the ambulance.

An examination immediately after admission showed the heart's action rapid and very tumultuous, with marked accentuation of second sound. No murmurs. The lungs were normal throughout, except at the right base posteriorly, where there was slight hypostasis. Auscultation showed that peculiar breathing which is so often found in uræmic conditions, viz.: inspiration prolonged and very harsh, expiration about the same length as inspiration, having a harsh and, in addition, peculiar dry sound. The liver was somewhat reduced in size. The feet and ankles were quite œdematous. The pupils were pin-point in size. An examination of the head revealed an old scar, with marked depression, situated nearly over the centre of the fissure of Rolando, on the right side. The urine was heavily loaded with albumin, and contained large granular casts.

The man was at once put in a Simpson bath, and began to sweat profusely. At 11.10 he had a severe convulsion, which involved the muscles of the whole body. Nitrite of amyl was given by inhalation. A second convulsion followed at 11.27, and a third at 11.42. Nitrite of amyl was also used in both of these convulsions, but without effect. At 11.45 chloral, gr. xx, was given. At 11.52 a convulsion began, but this was aborted by the use of

chloroform. At 12, noon, 12.08 and 12.16 P. M. convulsions appeared, which were modified by the chloroform inhalations. At 12.25 the patient was bled, f℥xij of blood being taken, followed, at 12.30, by a very slight convulsion. Fifteen minutes later the patient was conscious, and gave the following history:

Family history negative. He has suffered from the usual diseases of childhood. Had always been a very hard drinker. Three years ago he was struck on the head with a stone; was unconscious for some time, and ever since then a prolonged spree would be followed by these convulsions, but never of such severity as on this occasion. They had been growing worse with each succeeding attack.

He was given chloral, gr. xx, at 2 P. M., and diluted spts. æth. nitros. every two hours. He was quiet the rest of the day, and slept well that night.

June 6th.—Patient quiet during day, sleeping most of the time. 10.05 P. M. a convulsion occurred, aborted by chloroform. At 10.12 P. M. another convulsion began, the character of which had changed, being now unilateral and confined entirely to left side. It started in left arm, which was thrown about wildly; then the leg and face became affected, and the left leg was drawn up and down with considerable violence. The corner of the mouth was drawn down and to the left, and there was conjugate deviation of the eyes. At 10.35 P. M. a similar convulsion, aborted by chloroform. 11 P. M., patient bled (℥xj). 11.08 P. M., slight unilateral convulsion, controlled by chloroform. 11.30 P. M., chloral, gr. xx, given. 11.40 P. M., slight convulsion; chloroform used. The patient slept during remainder of night.

June 8th.—Patient quiet during day, sleeping most of time.

June 9th.—Patient rested well until 2.10 this morning, when he had a slight convulsion. At 2.50 A. M. a convulsion began, and was aborted by chloroform. At 3.10 chloral, gr. xx, at 3.50, a slight convulsion. After 4 A. M. the patient slept, and was quiet during the day.

June 10th.—Patient rested well last night, and has been quiet during the day.

June 11th.—Patient slept during entire night, and has been quiet this morning. He insisted on going out, so he was discharged. His temperature ranged from 102.3° to 97°, being highest during the convulsions.

Remarks by Dr. Hughes.—The convulsions here seemed to be complex in origin. The injury to the skull had undoubtedly affected the motor centres beneath, and any intense excitement, such as a prolonged debauch, was enough to convert this condition of the motor centres into a discharging lesion, while without such excitation the irritation was not sufficient to produce symptoms. When admitted to the hospital he was in a uræmic state, and the general convulsions due to the uræmia masked the localized ones. When, owing to the clearing up of the uræmic condition, the general convulsions disappeared, there was left a convulsive condition limited to the left side, due to the discharging lesion in the right motor centres. It is interesting to note, too, the effect of the blood-letting. The first bleeding speedily restored consciousness and abolished the general convulsions, probably through its action on the uræmia. Then the original, unilateral convulsions became apparent, gradually growing more severe, to be controlled, in their turn, by a second bleeding, by a relief to the congestion of the right motor centres. Without the bleeding, the result would probably not have been satisfactory; for up to that time, under vigorous treatment, the condition had been growing steadily worse. Here, as I think is often the case, free blood-letting, combined with the administration of chloral, proved to be the most efficacious treatment for the convulsions of uræmia.

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EDITORIAL.

THE PTOMAÏNES FROM THE CULTURE LIQUIDS OF THE HOG CHOLERA BACILLUS.

THAT the chemical products of bacterial growth are a very potent and oftentimes the chief factor in causing death in different forms of disease is now pretty generally believed, the fact that such chemical compounds are formed having been conclusively proved largely through the efforts and work of Brieger. In 1886, Sirotinin (*Zeitschrift für Hygiene*, I, p. 463), made a number of experiments with the typhoid fever bacillus, and succeeded by the use of sterilized cultures in producing death, accompanied by lesions resembling those produced by living bacilli. Beumer and Peiper (*Zeitscrift für Hygiene*, II, p. 110), confirmed these results, and drew attention to another very important point, namely, that if small doses have been injected previously to the introduction of the larger dose, death does not result. Hence they conclude, that perhaps immunity may be produced by continued injection of sterile cultures in varying doses.

That these chemical products may produce immunity is no new theory, but it is only recently that it has attracted the attention of investigators. In

1887 Drs. Salmon and Smith (Annual Report, 1887, *Hog Cholera Bulletin*, 1889), of the Bureau of Animal Industry, Department of Agriculture, Washington, D. C., conducted a number of experiments upon pigeons, and demonstrated conclusively that they could produce immunity from the disease of hog cholera by previously injecting beneath the skin of one pectoral muscle sterilized culture liquid of the hog cholera germ. The injections were made at three different times, and a few days after the last injection the pigeons, together with checks were inoculated with hog cholera virus. The checks died, the vaccinated pigeons recovered. This immunity was undoubtedly produced by the chemical compounds resulting from the growth of the germ.

The next step in the study of this disease was to learn what these chemical compounds are, and to isolate them. The work of Brieger and others, during the past years, has shown in the case of a number of disease germs at least, that these chemical products, or ptomaïnes, are of the character of amines. More recently Brieger and Fraenkel (*Berliner klin. Wochenschrift*, March 17th and 24th, 1890, pp. 241 and 268), have published researches upon the diphtheria and typhoid fever germs, and Bagniski and Stadthagen (*Berliner klin. Wochenschrift*, March 31, 1890, p. 294), independently and at about the same time upon the cholera infantum germ, in which they show that in addition to the ptomaïnes proper, there is also an albuminoid body formed by the growth of the germ, which is very poisonous and is probably an intermediate stage before the final production of the ptomaïnes. They hold that this albuminoid body plays a very important factor in the course of the disease. Hankin (*British Med. Jour.*, 1889, p. 810), has gone a step further, and has succeeded in producing in rats and guinea-pigs immunity from the disease of anthrax, by previously vaccinating them with albumose obtained from sterilized cultures of the anthrax germ.

The Bureau of Animal Industry in Washington has recently studied the chemical side of the hog cholera culture liquids. At the meeting of the American Association for the Advancement of Science, August, 1890, E. von Schweinitz (*Medical News*, September 6th, 1890), read a paper describing briefly the ptomaïnes and albumose which he had isolated from the hog cholera culture liquids. The culture liquid used was a peptonized beef infusion. He succeeded in isolating small quantities of two old ptomaïnes, and one new one to which he temporarily ascribes the formula $C_{14} H_{36} N_2$. This ptomaïne, together with albumose, seem to be the potent poisons in the disease of hog cholera. He also stated that a number of experiments in producing immunity with the isolated compounds had been made, and that guinea-pigs had been rendered proof against the disease of hog cholera. In the more detailed accounts of the experiments in prevention of disease (*Medical News*, October 4th, 1890), Schweinitz suggests the names *Sucholotoxins* for the ptomaïnes and *Sucholoalbumin* for the albumoses obtained from the growth of the hog-cholera bacillus. He records here a series of experiments, twenty in all, made in duplicate upon guinea-pigs, in which, by use of the sucholotoxins, or sucholoalbumins, or both, perfect immunity was produced from subsequent inoculation with cholera virus. Checks were used in all the experiments, and in every instance these died within the required time. Special precautions were taken to prove that the

vaccinating material was free from germs. Large doses of the sucholotoxins produce quick death, the immunity is therefore established by a gradual tolerance of the poisons by the system. The results seem to be very conclusive. Novy (*Medical News*, September 6th, 1890), also has published an article describing the isolation of a ptomaïne and albumose from the growth of the hog-cholera bacillus. He used pork broth as culture media, and allowed it to stand in the incubator for eight weeks. He produced death in rats by inoculating them with the albumose, and immunity in one rat by previously vaccinating it with albumose. Though he ascribes a somewhat different formula to the ptomaïne, from that previously quoted, it is probably the same base that Schweinitz has isolated. Novy's work is open to one criticism, namely, that he does not state what precautions were taken to show that the albumose he used was free from germs, and that his culture media had not become contaminated with foreign germs. It is well known that it is very difficult indeed to keep large quantities of culture media free from contamination for any great length of time.

The experiments of Hankin upon anthrax, and Salmon, Smith and Schweinitz upon hog cholera, open a wide field for speculation and experiment.

This line of research is only in its infancy, and it is quite within the range of probabilities that at no very distant day many of the most dangerous diseases of men and animals may be cured, if the expression may be used, by prevention. The tabulated results of Schweinitz's experiments, taken from the *Medical News*, follow:

TABULATED RESULTS OF EXPERIMENTS IN PREVENTIVE VACCINATION OF GUINEA-PIGS FROM HOG CHOLERA.

No. of Experiment.	Material used for treatment.	Hog-Cholera Virus used for each Animal.	Number of Animals Used.	Number of Checks.	Number of days between inoculation with virus and death of the checks.	Result in Treated Animals.
I	A. Sucholotoxin	0.10 cc.	2	2	8 and 9 days	One died in 11 days; 1 recovered.
II	Sucholoalbumin	" "	2	2	7 days	Died in 17 days; great resistance.
III	Sucholoalbumin	" "	3	2	8 and 10 days	Recovered; immunity.
IV	1 Sucholotoxins 2 Sucholotoxin and albumin	" "	2 2	2	8 and 10 days	Recovered; immunity.
V	1 A. Sucholotoxin	" "	2	2	8 and 9 days	Recovered; immunity.
	2 Sucholotoxins	" "	2	2 blanks 2 checks	8 and 9 days	Blanks died in 18 and and 30 days. Others not affected; immunity.
VI	Sucholotoxins	" "	2			
VII	Pure chemicals	" "	2	2	8 and 9 days	Two died in 13 and 14 days. Third recovered; immunity.

THE SURGICAL TREATMENT OF TUBERCULAR PERITONITIS.

To the observer who has attentively watched the development of abdominal surgery, nothing is more surprising or inexplicable than the success attendant upon opening of the peritoneal cavity for the treatment of tubercular peritonitis. The first reported cases were naturally received with general incredulity, but the evidence has been accumulating till it is now convincing, and we can no longer doubt that even an exploratory incision is frequently followed by permanent cure of the local tubercular processes.

König (*Centralblatt für Chirurgie*, No. 35, 1890) has collected 131 cases of peritoneal tuberculosis treated by abdominal section, fourteen of which he himself operated upon, in the hope that a careful study might determine absolutely not only the possibility of a permanent cure, but also might suggest a satisfactory explanation for such a result. Of the 131 cases, 23 were greatly improved; 84 were cured (65 per cent.). But since of these 84 cases 54 were reported before two years had elapsed after the operation, it is not safe to decide as to permanent cure. There remain, then, 30 cases (24 per cent.) who exhibited no signs of intraperitoneal tuberculosis for several years following abdominal section. Spencer Wells reports one of twenty-five years' standing, Schücking one of fifteen years, and Stellwag one of thirteen years.

In 3 per cent. of the cases death could be attributed to the operation. In the other cases terminating fatally, either from the effects of local or general tuberculosis, the operation not only had no effect in hastening the end, but seemed almost invariably to exert a distinctly beneficial action. To the abundant clinical evidence thus offered as to the certainty and permanence of cure, post-mortem examination of patients perishing, after operation, of other maladies has offered full support.

As to the method by which these cures were obtained, examination of the cases shows that there was only one condition common to all; that is, the belly was freely opened, and a certain amount of intraperitoneal manipulation was practised. In some cases this incision was merely diagnostic; in others the liquid was evacuated as freely as possible; in still others, more radical surgical measures were adopted, curette, scissors and knife being used. All of these measures were followed by cure. Even the employment of antibacterial agents, often considered the sole factor in the favorable result, seems to be absolutely without influence. In eighty cases the abdominal cavity was washed out with antiseptic solutions, or sprinkled or rubbed with iodoform. In fifty cases no antibacterial agents were employed. Apparently a greater percentage of cures followed where no disinfectants were used.

A question of major importance is as to whether only certain forms of peritoneal tuberculosis can be cured by section. As is well known, the effusion

may be serous, sero-fibrinous or purulent; may be circumscribed or diffuse. The tubercles may vary in size, being miliary in one case, in another as large as a hazelnut. The peritoneum may be smooth, roughened, thickened or covered with pseudo-membrane. In so far as clinical studies go, it would seem that all these different forms of tubercular peritonitis have undergone resolution after abdominal section, and consequently that they are all curable.

Peritoneal tuberculosis is dependent upon extension of the tubercular inflammation from adjacent organs, or to direct infection by means of the bacilli circulating with the blood. Phillips's pathological studies showed that of 107 cases of tubercular peritonitis the lungs were involved in ninety-nine, the pleura also in sixty, and the bowel in eighty. The frequency of intestinal invasion by tubercle is well known. The serosa becomes quickly involved, but this involvement may remain strictly localized, and may undergo spontaneous resolution if the original source of infection, the intestinal lesion, citatrizes, as autopsy findings show that it frequently does. When, however, the peritoneal involvement comes from a large organ, and is extensive, it is as difficult to conceive the rationale of spontaneous resolution as it is to explain in what way operative procedure, excepting that of total ablation of the disease, can possibly be of the slightest avail. Yet the fact remains that a gratifying percentage of success follows simple opening and intra-abdominal manipulation in cases of tubercular peritonitis.

EXOPHTHALMIC GOITRE.

WHENEVER a discussion of the pathogenesis of exophthalmic goitre comes forward for review, the conclusion is reached that this is still very obscure; or is, as Dr. Corning (*New York Medical Journal*, September 13th, 1890) in a recent discussion of the nature and treatment of this disorder has said, in a "chaotic condition." According to this writer, as at best all statements in regard to the probable nature of the disorder are theories, that hypothesis which ascribes the symptoms to a functional disturbance of the sympathetic system most fully meets the indications. No doubt if the manifold functions of the sympathetic be taken into consideration, as well as the familiar features of Graves's disease, derangements of the former may be made more or less satisfactorily to explain the latter. Disease of the sympathetic as the cause of this disorder has received the support of Trousseau, Eulenberg and Guttman; but, as Sattler has pointed out, it has never been experimentally proven that section of this nerve could give rise to either goitre or exophthalmos, nor are clinical facts on record showing that paralysis of the sympathetic has been followed by such symptoms. For this reason he advanced the idea that the lesion was a circumscribed one in the vaso-motor centre, or perhaps in some more centrally situated portion of the brain which directly governs the vessels of the thyroid and

orbital contents. In a confirmation of this theory the autopsy made by Dr. White in a case of exophthalmic goitre, and to which we called attention in the MAGAZINE (Vol I, p. 541), showed lesions in the form of numerous hemorrhages in the neighborhood of the nucleus of the sixth nerve immediately under the posterior surface of the medulla, extending from the middle line as far out as the restiform bodies, which were slightly implicated. The reported complication of diabetes which Manby has seen in several cases of goitre among three families, points to the vicinity of the fourth ventricle as a possible common seat of disease. Experimental evidence bearing upon this point is furnished by the researches of Filehne, who found that section of the upper and inner part of the restiform bodies in dogs was followed by one or two of the cardinal symptoms of this affection ; and Durdufi (quoted in the *Medical News*, September 27th, 1890) has produced exophthalmos by section of the medulla at the level of the auditory nucleus. The acceleration of the heart's action has been assumed to be due to a lesiou of the vagus centre and interference with its inhibitory action ; while the marked preference shown by the symptoms for the right side of the body receives experimental support from the researches of Arloing, Tripier, Masoin, Mayer and others, which have shown that it is the right vagus which is chiefly concerned in the iuhibition of the heart. Moreover, the view which attributes the symptoms of exophthalmic goitre to a central lesion is strengthened by the probability that Graefe's sign is best explained by a disorder of the coördinating centre for associated motions of the lid and eyeball, and additional confirmation arises from the not infrequent presence of paralyses of the external recti muscles, and of the associated motions of the eyes in this disease. Altogether, the theory which has ascribed Graves's disease to a lesion of the cervical sympathetic causing paralysis of the vaso-motor nerves, does not at the present time receive the support or the belief that it formerly enjoyed ; and while the pathology still remains quite obscure, the evidence thus far tends to show that the disorder depends upon a distinctly central lesion.

Certainly our knowledge of the true nature of the disease is not sufficiently definite to become the basis for practical treatment, which must rest, for the present, purely upon clinical observation. Satisfied with this point, Dr. Corning describes the salient points in the therapeusis of this disease as follows : In order to prevent the excessive blood pressure in the thyroid gland and orbit, he places the patient in a warm bath at least once a day for three-quarters of an hour or more ; if this proves inadequate, elastic straps are applied about the legs and the swollen gland painted with collodion, while the constricting measures are further enforced by a carefully adjusted elastic truss. He has even bandaged the eyes during the bath, but is not satisfied that he has obtained permanent reduction of their protrusion. In addition to these measures, galvanism is applied through an electrode of potter's clay, moistened with iodine, sufficiently large to cover the entire thyroid. This is connected with the positive pole of the battery, while the negative electrode, in the form of a large flat sponge, is attached to the back of the neck. The seances should continue from ten to twenty minutes twice a day. When the pulse is rapid

and the arterial tension high, aconitin is prescribed. If, on the other hand, the pulse lacks tension, digitalis, sparteine and strophanthus are exhibited.

Dr. Corning considers the diet of the patient of great importance, and advises the use of milk, from two to four quarts a day, in addition to which bread, butter, poultry and game in moderation may be taken, or occasionally a raw egg beaten up with sugar and milk. Alcohol is distinctly contraindicated. Iron, arsenic, and bitter tonics, if they are called for, should be given. Emotional excitement of any kind must be forbidden, and although he insists upon prolonged cerebral rest, he does not think this is best obtained by the so-called rest-treatment which, in his opinion, exercises an unfortunate influence upon the irritable and restless dispositions of the patients.

NEW TESTS FOR BINOCULAR VISION.

It frequently becomes a matter of importance to ascertain the presence or otherwise of true binocular vision as an index of the efficiency of treatment in squint, to decide the advisability of "correcting" both eyes when these are greatly dissimilar in refraction, and, indirectly, as a means of detecting attempts at malingering, or to determine the existence or absence of monocular blindness. One of the simplest experiments is to hold a pencil midway between the eyes of the patient and a printed page, perpendicularly to the lines of type. This presents no obstacle to the reading if binocular vision is present, but in the event of its absence portions of the page will be obscured by the pencil. The ordinary prism tests, Hering's drop experiment, and the various exercises with the stereoscope are familiar methods for obtaining the same object.

The effect of lenses in changing the form of retinal images has been studied especially by Donders, Stellwag and Knapp, while binocular metamorphopsia produced by correcting glasses was the subject of a capital paper by J. A. Lippincott, published some eighteen months ago. In this research Dr. Lippincott (*New York Medical Journal*, September 27th, 1890), came to the following conclusions, which we quote from this most recent communication upon this subject, and the applications to which his experiments have led:

"1. A + spherical placed before one eye makes the corresponding side of a rectangle appear higher than the other side.

"2. A — spherical makes the corresponding side appear lower.

"3. A + cylinder, vertical, *increases*, whereas a + cylinder, horizontal, lessens the apparent height of the corresponding side.

"4. A — cylinder, vertical, lessens, whereas a — cylinder, horizontal, increases the apparent height of the corresponding side.

"5. A + cylinder, axis pointing upward and outward, before either (and still more decidedly before each) eye makes the top of a rectangle appear nar-

rower than the bottom, while if the axis points upward and inward the top appears wider.

"6. Minus cylinders, axis upward and outward, increase, whereas those with axes pointing upward and inward lessen the apparent relative width of the top.

"7. Binocular vision is necessary for the production of optical metamorphopsia. Hence the lens must not be so strong as to make the image sufficiently blurred to be incapable of fusion with that formed by the other eye, for in that case the blurred image is suppressed mentally and monocular vision thus practically established."

Inasmuch as the appearances just quoted can be demonstrated in all eyes without regard to the character of their refraction, provided true binocular vision exists, Dr. Lippincott has employed these phenomena to replace the ordinary stereoscopic tests. In fact, to quote his own language, "they are stereoscopic tests with the stereoscope left out." For the purpose of practical application Dr. Lippincott advises that a + 2 cylinder, vertical, be held before one eye, while a twelve-inch-square card is placed at the ordinary reading distance, and the patient asked to describe which of the two sides is higher. As a control test, the cylinder is now turned with its axis horizontal and the card again viewed. That side which in the first place appeared higher now seems to be lower than the other. So instead of a + cylinder a — cylinder, first with its axis vertical and then with its axis horizontal, may be employed; or the glass may be held with its axis oblique before the eyes. The ease and rapidity with which this examination can be made, and its undoubted accuracy in so far as a proof of true binocular vision is concerned, commend it as a very time-saving method. Concerning its application to the detection of the presence or absence of monocular blindness, it may be said, as Dr. Lippincott has pointed out, that if the results are negative they demonstrate only the absence of stereoscopic vision, but do not prove the presence of monocular blindness. They none the less, however, could be employed as a control test in association with the other methods which usually depend upon the prevention of the sound eye from seeing, or in the case of malingering, upon the prevention of that eye which is claimed to be sound from seeing.

No very satisfactory explanation of these phenomena has ever been given, although in the opinion of the author of the test that one put forward by Dr. John Green most nearly solves the problem. This writer, discussing the apparent distortion of objects viewed through lenses, points out that as we learn to see things as they are through an education of the sense of vision, when the data upon which we have learned to rely are suddenly changed, elusions are apt to be evoked requiring a correction of the judgment in accordance with the new conditions.

BOOK NOTICES.

A Text Book of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B. Sc. Philadelphia: Lea Brothers & Co., 1890.

Works on therapeutics are legion in number, and yet very few are of real value, and many only undigested compilations of the most important branch of practical medicine. On the other hand, in addition to some excellent foreign treatises, our national literature possesses the books of world-wide renown written by Stillé, Bartholow and Wood, especially the work of the latter, who may be justly considered the greatest living American therapeutist. The late eminent surgeon and philosopher, Samuel D. Gross, pronounced H. C. Wood's "Therapeutics," and not without reason, to be the most thoroughly scientific and practical treatise on the subject in *any* language. Dr. Hare's book, in its own eminently original line, deserves to be placed on the same level with Wood's standard work.

The volume before us consists of 632 pages, and the matter, representing all the modern progress of therapeutical science, is treated in a condensed, terse and thorough manner. The author not only presents briefly the physiological action of drugs on the healthy organism, which is the outcome of modern experimental therapeutics, but also treats the subject with special reference to the application of remedial measures to disease and their employment upon a rational basis. Bearing in mind that students and the majority of practical physicians are not generally skilled therapeutists, the author has most successfully managed to give in a nut-shell, as it were, what is most essential in our knowledge of this branch of medical science.

The book is divided into four parts. Part I is devoted to general therapeutic considerations, such as the mode of action of drugs, modes of administering drugs, dosage, idiosyncrasy, absorption of drugs, duration of action of drugs, indications and contraindications, and combination of drugs for a joint effect.

In Part II drugs are taken up, and leaving out of the question the subject of classification, which is more or less arbitrary with the different authors, Dr. Hare discusses each agent separately and in alphabetical order. This, to say the least, is very convenient to both student and practitioner. In brief, but brilliant paragraphs, we find a sufficiently full consideration of the physiological action of the medicines upon the different parts of the economy, and miss with satisfaction lengthy and unprofitable discussions. They contain, what students most need, the salient points in regard to what is *positively known* about such actions. The paragraphs which follow are devoted to the therapeutics of the drugs described, poisoning and the treatment; then their preparation and administration. The differential diagnosis between the action of certain drugs and the symptoms of certain diseases, necessarily important in many instances, is not omitted, and in these cases excellent tables are appended. Notice has been taken of the *most important* of the new drugs, and thus articles are devoted to acetanilide, anthrarobin, aristol, chloralamide, chrysarobin, hydrastis, ichthyol, iodol, paraldehyde, resorcin, salol, scoparius, sodium ethylate, somnol, sozoiodol, strophanthus, sulphonal, sumbul and thallin.

In Part III remedial measures other than drugs, and foods for the sick are considered, and the subjects of acupuncture, antiseptics, cold, counter-irritation, disinfection, heat, kataphoresis, and venesection are treated in a masterly way. The article "Foods for the Sick," in which the modes of preparing the different diet lists for invalids is discussed, seems to us particularly valuable. The subject of medical electricity, treated of in many works of this kind, has been wisely omitted in this book, owing to the fact that "electrical therapeutics has outgrown any work save one devoted to that subject alone."

A new, exceedingly interesting and entirely original feature of the work is that introduced under Part IV, "which has been written not with the object of providing a rigid system for treating disease, but rather for the purpose of bringing together the best remedies, and of showing how and why they are given." This part takes up almost one-half of the entire work, and we believe nowhere else is similar subject-matter so admirably presented, and we know of no work of its kind containing exactly similar features. It will meet *all* the wants of the general practitioner. The articles upon special topics contributed by de Schweinitz, Martin, Hirst and Reeves, do great credit to their respective authors.

The pages devoted to "Table of Doses and Remedies," "Index of Drugs and Remedial Measures," and "Index of Diseases and their Treatment" are thorough. The paper on which the book is printed and the print itself are really excellent. All this adds greatly to the value of the book.

On the whole, we may say, without exaggeration, that the present volume is in many respects unique, and a great credit to its young and highly intelligent author. Dr. Hare, in spite of his youth, of his youthful professional and scientific career, is already well known as an able experimental, didactic and clinical therapeutist, a happy combination which has eminently fitted him for the preparation of the present work. The author, besides his extensive original and admirably successful work in the laboratory, is thoroughly acquainted with the latest contributions to therapeutical science, and his book, as we have intimated before, certainly represents the actual state of such science. The book is a model of concise, clear and forcible description, an exponent of plain facts, and a thoroughly practical guide to the rational treatment of disease. Books like this make a lasting impression, and prove to be more valuable than we are apt, at first, to suppose. We heartily recommend the present volume to the student, the scientific therapeutist and the general practitioner, not only as a most satisfactory text-book, but also as a highly valuable work of reference.

We bespeak for Dr. Hare's "Practical Therapeutics" the greatest success in every way. The book, in fact, recommends itself. It is, undoubtedly, an important addition, and will become an ornament to our already rich American medical literature.

Terminologia Medica Polyglotta. A Concise International Dictionary of Medical Terms, compiled by Theodore Maxwell, M. D., Camb., B. Sc., Lond., F.R.C.S., Edin. Philadelphia: P. Blakiston, Son & Co., 1890.

The title of this book, which represents a huge amount of industry, is somewhat forbidding, and we are not sure after the searcher for knowledge has dipped into its pages and wandered through the somewhat devious paths, which are necessary before he finds the word which he seeks, that he will believe the object of this work, to assist medical men of various nationalities to read the medical literature of other countries, has been successfully attained.

The plan upon which the book has been constructed is best described by quoting the following sentence from the preface:

"French has been selected as the key language; consequently French terms are usually translated into Latin, English, German, Italian, Spanish and Russian, so that an English, German, Italian, Spanish or Russian reader can find the translation of a French term in his own language by a single reference. The Latin, English, German, Italian and Spanish terms being only translated into French, or into French and English, a further reference to the French translation first found will be necessary in order that the reader, who is of some nationality other than French, may obtain the meaning of the term he requires."

For instance, if the reader comes across the word *gicht* and turns to the dictionary he finds the English equivalent *gout* and the French *goutte*. If he understands neither of these two languages he must take French as his key-word, and turn to *goutte*, under which he will find the equivalent in seven different languages. To be sure, he should be a little cautious, and not happen upon the word *goutte* used in its pharmacological sense, otherwise he might be led sadly astray. He has a choice, however, in French key-words, and may take it into his head to look for *arthrite*, where he will again find seven words from seven different languages, each having more or less the general significance of the term *arthritis*. Once more, it seems to us, that he might go sadly astray in his translation. Besides this, as has already been pointed out in another review, this method is a roundabout one. If, for instance, the searcher for knowledge were an Italian, and he were reading a German book and found *gicht*, in all human probability he would turn to a German-Italian dictionary in order to find out the significance of the term, and not travel through such a circuitous path. It almost goes without saying that in a work in which such an enormous amount has been attempted, and in which it has been so condensed as to yield a volume of less than 500 pages, instead of one that might readily occupy a huge amount of space, certain well-known terms have been omitted, while certain other more or less useless words have found space. It is, perhaps, however, wonderful that the compiler and his collaborators have succeeded in getting such numbers of words together, and have omitted so few that are important.

We fail to understand how this book. which must forever remain a monument of industry, can be of real practical value to a man who is reading a language other than his own and searching for the meanings of technical terms. So many easier methods seem to suggest themselves that this dictionary is probably not the one to which he would turn for help. We none the less believe, however, that it will fill a vacancy very usefully in some libraries; for instance, in those belonging to men who are called upon to hurriedly glance through numerous periodicals written in various languages. The number of people engaged in such editorial work is necessarily limited, and on this account we cannot see but that the usefulness of the book is also distinctly confined.

PHYSICAL DIAGNOSIS AND PRACTICAL URINALYSIS: An Epitome of the Physical Signs of the Heart, Lung, Kidney and Spleen in Health and Disease. Edited by John E. Clark, M.D. Detroit: Illustrated Medical Journal Co., 1890.

Since medical students will use "Manuals" and "Epitomes" it would be well were more of them as good as Dr. Clark's little volume. It is very condensed; it is entirely practical, and yet does not neglect the scientific method for the rule of thumb, as do too many such books. Its faults are those of its kind, almost unavoidable when brevity is so strenuously aimed at; rules are stated as if there were no exceptions, and, on the other hand, exceptions, when mentioned, have a disproportionate appearance of importance from their isolated statement. The urinalysis is especially good and clear, though the same faults may be found with some parts of it.

RHEUMATISM AND GOUT. By F. LE ROY SATTERLEE, M.D. Detroit: George S. Davis, 1890.

The author considers in this little work the three kindred diseases, rheumatism, rheumatoid arthritis and gout. Accepting for them all the theory that an excess of uric acid in the system is their cause, he dwells with particular emphasis on the value of the alkaline mode of treatment, and advocates the avoidance of all highly nitrogenous foods. Further, his judgment forbids the use of alcoholic stimulants and sugar, or any highly saccharine material, although he allows and recommends a farinaceous diet. Speaking of the treatment of chronic rheumatism he says: "The diet of a patient chronically rheumatic, but with fair general health, need not be restricted save in the matter of meats, saccharine foods and alcoholic stimulants. A farinaceous diet is not contra-indicated." The same principle is laid down for the reader's guidance in the treatment of rheumatoid arthritis and gout, in both the chronic and the later stages of the acute forms.

The author does not attempt to formulate a theory to explain this apparent self-contradiction—apparent, since it is evident that all farinaceous materials must be converted into glucose before obtaining an entrance into the system. However, in such a matter as this, a little experience often is of more value than a good deal of theory; and from the author's familiarity with the subject, made evident in other ways, we may conclude that his results justify his recommendations.

In contrast with the barbarously incorrect Latin he makes use of in writing his prescriptions, the rather showy classical quotations he indulges in so freely bring up suggestions of a greater familiarity with a "dictionary of quotations" than with the original works of those ancient writers by whose aptness of thought-expression he profits. It is a great pity that physicians should not at once decide that good English is better than bad Latin, even in the writing of prescriptions.

But altogether, in this brochure will be found a great deal that is of much interest and value to the medical profession.

MISCELLANEOUS.

THE MEDICAL CLASS AT THE UNIVERSITY.

IN the last issue of the MAGAZINE it was stated that there was every reason to believe that the new class in the University would be at least as large as that of last year. The roll of matriculates has steadily increased, and at this date, October 15th, includes the names of 569 men divided as follows:

First year	220
Second year	183
Third year	161
Fourth year	5

Advices at the present time indicate that this list may be increased by at least twenty additional names before the close of the month.

"THE PRESCRIPTION."

On the first day of January, 1891, the publishers of the *New England Medical Monthly* will issue a new medical journal edited by Dr. W. C. Wile, the editor of the *New England Medical Monthly*, to be called *The Prescription*, and which will be devoted entirely to practical therapeutics. The new journal will contain the favorite prescriptions of leading members of the profession as well as all the valuable recipes which can be gathered from general medical literature. The main object of the journal will be to present the practical application of therapeutic measures.

CORRESPONDENCE.

The Medical Examining Board of Virginia.

To the Editors of the University Medical Magazine :

Dear Sirs : There seems to exist among the members of the profession in Philadelphia, and probably throughout the State, the impression that this organization has for its prime object the rejection of all applicants not residents of Virginia or graduates of her institutions. This was the opinion of your correspondent, but a thorough knowledge of the board and its methods, obtained by a recent experience in passing the required examination, has led him to the conclusion that it has for its sole object the protection of the people and the profession in the State from the gravest danger of the times—the uneducated physician.

To demonstrate the fact that the board cannot be prejudiced in favor of Virginia, it is only necessary to give a brief description of the manner in which it conducts its examinations.

The board consists of thirty-seven members—thirty-two regular practitioners and five homœopathists, the latter acting only when graduates of their own school apply. It holds two examinations each year, and examines on eleven subjects, under eight divisions, as follows : Chemistry, Anatomy, Medical Jurisprudence and Hygiene, Physiology, Materia Medica and Therapeutics, Obstetrics and Gynecology, Surgery and Practice. The board is divided into committees of four to examine on each subject. The examinations are written, and last over a period of two days, three hours being devoted to each branch.

All applicants are examined in the same room at the same time. Each one is assigned a desk, which is numbered. The secretary of the board receives the name of each candidate, with the number of his desk. This is the only instance in which the applicant's name appears, and the secretary the

only person to whom it is known. Each paper is signed with the desk number as a substitute for the writer's name. The successful numbers are handed to the secretary, and from him the applicants represented by these numbers receive their certificates. The papers of each candidate pass through the hands of thirty-two men, none of whom have any knowledge whatever of the author. They are examined and marked strictly on their merits. Thus it is evident that no favoritism can be shown.

The University of Virginia always makes a fine showing in these examinations. Out of fifty-seven applicants but one has been rejected. This is accounted for by the fact that her course, though theoretical, is thorough, and that the requirements for graduation are high. Each student is required to pass a written examination of eight hours, as well as an oral examination on each subject. In these he is required to make a general average of 83⅓ per cent. This results in producing well-informed men, as is evidenced by the showing they make at all competitive examinations. One-sixth of all the surgeons in the United States Navy to-day are graduates of this institution.

Some of our Northern colleges ought to look with shame upon the records their graduates have made before this board. There certainly must exist some grave defect in the mode of examination in these institutions, or such men would not be graduated. These results demonstrate the necessity of State boards.

The Virginia examination is as practical as a written examination can be, and is well adapted to discovering the extent of the applicant's knowledge. The profession and inhabitants of Virginia are to be congratulated on having so long possessed such a noble institution as is her Medical Examining Board.

It is a fact to be mourned over that Pennsylvania has not, long since, followed her good sister's example. Such a step is becoming each day more imperative. Unless we soon obtain this law, our State will become a resort for the applicants discarded by the States about us—a class of men totally unfitted to perform the many grave, responsible duties of the physician.

It was humiliating in the extreme to hear a discarded Virginia applicant —a graduate of a Philadelphia college—say: "Oh! well, I can practise in Pennsylvania, as I am registered there."

Must the general average of the profession in Pennsylvania be lowered by the offal from other States?

The work accomplished by these State boards is most commendable. They have for their object not only the elevation of the profession, but a greater and nobler one—the protection of human life. Some method of blotting out the many inferior medical schools in our country must be obtained, and certainly none seem more potent to that end than this system of State examinations. When it becomes universally adopted, one of two things must befall them—an elevation of their standard, or the closing of their doors.

Yours truly,

SAMUEL M. HAMILL.

Oak Hall Station, Pa., September 29th, 1890.

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ORIGINAL ARTICLES.

CONCORDANT MICROMETRIC MEASUREMENTS.

By Theodore G. Wormley, M.D.,
Professor of Chemistry, University of Pennsylvania.

Some years since, 1873, for the purpose of determining how far the measurements of blood corpuscles might vary according to the powers of amplification employed and the method of measurement pursued, seven closely adjacent corpuscles were selected on a recently mounted slide of human blood, the corpuscles varying in size from about the largest to about the smallest usually found in blood of this kind. The first measurement of the series was made by means of an eye-piece micrometer, the value of the spaces being 1–20,000th of an inch, as determined by what was believed to be a true 1–1000th inch space on a stage scale, the readings being made, as accurately as could be judged, to 1–10th division of the eye-piece scale.

Other measurements of these same corpuscles were made under different powers of amplification and corresponding varying values of the eye-piece micrometer, and also by the cobweb micrometer and by projection, with, within narrow limits, practically the same results. It was found, as a general result, that an amplification of about 1000 diameters was quite as satisfactory as any higher power for this purpose.

Very recently these same corpuscles were measured, without any knowledge of previous results, by Dr. William M. Gray, Surgeon-General's Office, Washington. He employed an entirely different instrument and a micrometry

of 1–15,000 inch as established upon a stage scale in the Surgeon-General's Office, the readings being made to 1–8th division of the eye-piece scale.

The size of the individual corpuscles as determined by these two series of measurements was as follows:

CORPUSCLE.	W., NOV., 1873. MICROMETRY = 1-20,000 INCH.	G., OCT., 1890. MICROMETRY = 1-15,000 INCH.
No. 1	1–2857 inch.	1–2857 inch.
" 2	1–2941 "	1–2927 "
" 3	1–3077 "	1–3000 "
" 4	1–3175 "	1–3157 "
" 5	1–3333 "	1–3333 "
" 6	1–3448 "	1–3529 "
" 7	1–3774 "	1–3750 "

The mean average difference in these two series of measurements is only 1–1,024,000th of an inch. The greatest difference observed was in the measurement of the sixth corpuscle, in which, however, the difference is something less than 1–150,000th of an inch.

These same corpuscles were measured in 1876 by the late Dr. Joseph G. Richardson, by means of a cobweb micrometer, with an average difference from the above results of about 1–350,000th of an inch. In this examination by Dr. Richardson, the diameters of the first and fifth corpuscles of the series were made identical with the results observed by Dr. Gray and myself, the measurements of these two corpuscles being identical in the three independent series of measurements.

These results indicate how closely measurements of this kind, when properly made and observed, may coincide, and also, that the blood corpuscles, when once attached to a glass slide and dried, remain indefinitely unchanged in size.

THE TREATMENT OF GOITRE BY GALVANO-PUNCTURE. REPORT OF CASES.[1]

By James Hendrie Lloyd, M.D.,
Physician to the Home for Crippled Children, Philadelphia.

Reports have appeared in the medical journals several times in the past few years of the successful treatment, by different persons, of goitre, or bronchocele, by puncturing the growth with needles and passing a galvanic current directly into the tumor-mass. Among the most successful cases reported were those of Campbell, Rouge, Gröh, Amory and Duncan. The simplicity of the procedure, its strictly scientific character and the very satisfactory results obtained by it have always made it appear strange to me that these cases have

[1] Read before the College of Physicians of Philadelphia, October 1st, 1890.

not attracted more attention, and this treatment been more frequently tested. I was first induced to make trial of it four years ago in behalf of a lady who was suffering some of the most serious inconveniences goitre can inflict, and who had been refused surgical aid by eminent members of the profession. The report of her case and several others will form the body of this paper.

The use of electricity in this manner is founded upon well-established physical laws. Electrolysis is the great elementary fact in electro-physics. As there is much discussion now about the value of electrolysis in some departments of surgery, it may be well to define at once the meaning of this term, especially as both those who use and those who condemn it appear often to ignore some essential facts. Electrolysis is the breaking up into its constituent elements, by the galvanic current, of the substance through which it is passed. Thus, if a current is passed through water the oxygen is given off at the positive and the hydrogen at the negative pole. This is according to a definite law of quantity, *i. e.*, so much electricity, so much oxygen and hydrogen. What occurs in water occurs also in more complex fluids, such as milk, blood, serum and fluids containing chemical substances in solution. The more complex and organized these fluids or substances are the more difficult it is to state in exact chemical terms what the changes are ; but there can be no doubt that the process is just as strictly according to law in the structures of the human body as in the simplest of all fluids, water, and that the amount of change is in accurate accord with the quantity of electricity employed. It thus becomes evident that the dosage of electricity must be *sufficient*, and also that the current must be brought into *direct contact* with the substance or tissue to be acted upon. Hence it is not proper to pass it through skin or mucous membrane. A wet sponge electrode applied on the skin over a goitre is simply useless ; and an electrode passed at hap-hazard into the vagina, where it must act through a moist mucous membrane, whatever else it may do, does not cause much electrolysis in a fibroid tumor. Finally, it is of practical importance to remember that the positive pole collects about it the acid constituents, and is, therefore, very irritating, apt to cause sloughs and hemorrhage, and erodes the needle unless this be of platinum, while the negative pole is free from all these objections. Hence the negative needle alone may be used, although both needles are doubtless more efficacious.

CASE I.—Mrs. ——, aged 60 years, had a goitre involving the whole gland, but somewhat larger on the right side. It was especially prominent in front, causing an ugly deformity. It was of several years' standing, and tending to get worse. It was rather doughy in its consistency, and apparently had not undergone cystic degeneration. There was no exophthalmos, but there was great disturbance of circulation, especially in the head. This caused a constant sense of fulness, with noises in the ears, which was her most distressing symptom. She had a sense of pulsation in the tumor, synchronous with the heart, and a heaving impulse of the heart, with occasional palpitation. Her health was suffering to such an extent that she said she would be willing to take any risk to have the tumor cut out. She had been advised against excision by all her medical and surgical attendants. I undertook the case with misgivings, but determined that the remedy should be applied in a rational way and thoroughly tested. For this purpose I had constructed three small gold-plated needles well insulated to within one-third of an inch of the point.

These were connected by a branching cord, so that all could be attached to the negative pole. Briefly, the method was as follows: The needles were inserted well into the tumor, far enough to protect the skin by the insulating material. Care was taken to avoid veins, several of which, very large, ran over the surface of the gland. The positive pole was connected with a large, flat sponge electrode (four by six inches), which was applied to the nape of the neck. Thus resistance was reduced as much as possible, and a strong current made possible without too much pain. Even thus, however, the skin under the sponge became very angry at times, and in one instance blisters were formed. The strength of current employed varied according to the state of the gland and the patient's endurance. I always tried to keep it up strong as could be borne, because the law of electrolysis teaches that returns are commensurate with outlay. No antiseptic agents were used, because the galvanic current in the strength employed is probably antiseptic. The needles were kept scrupulously clean. The greatest strength reached was twenty-four milliampères, but this could not be long endured, as it caused much pain, giddiness and salivation. The average was probably somewhere from fourteen to eighteen milliampères. An accurate milliampèremeter was kept in circuit, and constantly observed; and a water rheostat was used to avoid shocks. This last is an important precaution when using strong currents about the head. The length of each sitting was about twenty minutes. The time factor is important in electrical measurements, for, of course, the longer the agent acts the greater the effect.

The results of the individual application were these: The gland-tissue became swollen around each needle, sensitive to pressure, and gas (probably hydrogen) crepitated within it and escaped from the punctures. The skin was sometimes reddened for some distance even beyond the gland, and occasionally the points of puncture were distinctly burned, because of defective insulation. For a day or two after the sitting the gland would be very sore, and on several occasions looked as though it would suppurate. This it never did, however, in this or any other case—a point to which I wish to draw especial attention. It was sometimes mottled and ecchymosed. The number of applications was fourteen, given at intervals over a period of six months.

The final result has been all that could be desired. The patient is cured. She has but a small portion of the obnoxious gland-tissue left—and all who know the risks of myxœdema will agree that it is better she should have some left. Her other symptoms have entirely disappeared. She has no throbbing in gland or head, no sense of fulness in head, no palpitation. By actual measurement the gland has been reduced several inches, and is now so small that it does not project sufficiently from the surface to make any difference in measuring the circumference of the neck. There are a very few punctate scars. It is very important to state that permanent results did not appear until long after treatment was commenced, and that subsidence of the gland having once commenced continued for a long time after treatment was permanently stopped. This has been observed by others, and is important in its bearing on the progress of the case. It is now more than three and a half years since this patient's final treatment. She has had no return of the tumor or its symptoms.

Case II.—This was a young lady with a small goitre of about eighteen months' standing. There was no exophthalmos or any physical symptoms of importance. She had, however, much mental disquiet on account of the tumor, a state of mind which I have noticed in most young women who have goitre. The same treatment was adopted as in the first case, except that only one needle was used, as the growth was small. The strength of current was kept as high as could be well borne, which I found was from fourteen to twenty milliampères. I gave her treatment every week for a long while, but I think now that if a strong current be used it will probably be found unnecessary to repeat at such short intervals or so many times. This patient after one treatment had quite a severe inflammation involving the gland and extending in the skin some distance down on the chest. She suffered some inconvenience also during treatment from violent twitching of the sterno-cleido muscle, although the current was not interrupted. Some punctate scars were made

because the insulating material was brittle and broke off. This was the cause also of the inflammation of the skin. When treatment was stopped the gland was shrunken and was hard and gristly. More than three years have passed, the patient has married and become a mother, and I have not heard of the tumor's return.

CASE III.—The result was not satisfactory in this case, because, in part at least, the goitre was not a satisfactory one for the trial. It was an immense growth of many years' standing, in a woman about 40 years old. It bulged out on both sides, reaching almost under the ears, and had very large veins running through and over it. I think part of it was occupied by a large cyst. The same treatment by puncture, and by strong currents, was employed, but the patient soon discontinued her visits, and I heard nothing more of her.

It was a very unfavorable case for any kind of treatment, and the only possible comment is that it had been allowed to grow too large before being submitted to the current.

CASE IV.—This was a very favorable case of follicular goitre in a woman, but after the first application the patient declined to submit again, as she feared the pain and the faint sensation caused by it.

I think in such a case ether could be used with advantage, the current strength being carefully gauged by a galvanometer. I have at present under observation two other cases, both in women. One is a cystic goitre which has already been operated on by another physician, by injections. It has been only partially obliterated by the injections, and is much disfigured by hard and extensive scar tissue, so that I do not look upon it as a very favorable case for electrolysis. The sixth case is a soft follicular goitre of the right lobe of the gland, in a young woman, and is the kind of a case which ought to be benefited.

General Conclusions.—None of these cases have been examples of exophthalmic goitre, although the first had some cardiac and vaso-motor symptoms. They have been cases of follicular bronchocele, *i. e.*, enlargement of follicles, some of them ultimately forming cysts. I think the treatment is especially applicable to the goitre in this early stage, although the first and most successful case was a long-standing goitre in a woman 60 years old. It would be an especial boon in the exophthalmic form of goitre—in fact, it has been used with success in them by some observers named above. I am not aware that thyroidectomy has been practised in exophthalmic goitre. In thyroidectomy there are two especial dangers—tetany and myxœdema. I saw no symptoms of the former in any of these cases—but, of course, the number is very small. In the first two cases nearly four years have passed and there have been no symptoms of myxœdema—nor has it been observed by others in their cases. As the gland is not completely destroyed it would seem that the risk of this mishap is reduced to a minimum.

Finally, there should be no scars in these cases if the needles are properly insulated. There is no hemorrhage, and in the above cases, with very strong currents, there was no suppuration. As Fort [1] has very aptly expressed it,

[1] Gaz. d. Hôp., Paris, 1889, lxii, 768.

electrolysis is the formation by chemical action of a bloodless incision without elevation of temperature.

I have thought it best to put these cases on record, not that I am an advocate of the method as against any and all other surgical procedures, but because in two, at least, of these cases definite beneficial results have been obtained in a precise manner—and this is all that the art of surgery or therapeutics by any method aims to achieve.

CONTRIBUTION TO THE TREATMENT OF GONORRHŒA.

By Thomas R. Neilson, M. D.,
Instructor in Genito-urinary Diseases, University of Pennsylvania; Surgeon to the Episcopal Hospital and St. Christopher's Hospital for Children.

The theory of the microbic origin of gonorrhœa, while it is perhaps in some degree lacking of the fullest confirmation in so far as the results of experimental investigation are concerned, is, nevertheless, well supported by clinical observation, and may now be said to have met with very general acceptance. It is not the purpose of this article to enter into a discussion of the etiology of the disease, or to review the numerous contributions to its literature that have been made by recent observers, its object being to give, with some casual remarks, an outline of the form of treatment which, in the last few years and up to the present time, I have employed in my service in the dispensary for genito-urinary and venereal diseases at the University Hospital, and in my private practice.

In considering the question of the treatment of urethritis, it is necessary to bear in mind the fact that the anatomical division of the urethra into two portions, the anterior and the posterior, the former comprising the bulbous and the pendulous or penile portions, and the latter the membranous and prostatic, makes it possible for the disease to exist and to run its course in the one without invading the other. In fact, infection of the posterior portion of the canal takes place through extension of the disease from the anterior portion, and is seldom met with until after the attack has reached its height, usually about the third week. Owing to the peculiarities of the construction of this part of the urethra, as well as to distinctive symptoms evoked by its invasion by the gonorrhœal process, the consideration of the treatment of posterior urethritis may be set aside until that of anterior urethritis has been disposed of.

Anterior Urethritis.—Antiseptic or antimicrobic treatment may be applied to the urethra either directly, by topical medication, or indirectly, through such drugs as are eliminated by the urine, and may therefore be brought into contact with the diseased mucous membrane during each act of

micturition. First, as to topical treatment. When should this be instituted? Upon this point there is a considerable difference of opinion. My own experience has taught me that it is not well to be too hasty in employing injections. A patient rarely presents himself for treatment until the first stage of urethritis—that of increase—is well established. In well-marked cases, where the swollen and everted lips of the meatus, profuse, purulent, greenish or bloody discharge, and intense *ardor urinæ*, are tokens of a severe inflammation, the risk of adding to this state of affairs has been of itself sufficient to cause me to hesitate to recommend the use of injections or other local treatment until a notable subsidence in the symptoms has taken place. Further, if the modern idea of the pathology of gonorrhœa be correct, there is a substantial reason for withholding topical treatment until the acme or height of the attack has been reached. According to Bumm's investigations, it appears that the gonococci, upon gaining access to the mucous membrane, speedily leave the surface and seek the papillary layer, where they first proliferate, and only gradually do they again reach the surface and multiply in the epithelial layer. It is obvious, therefore, that in the latter stages of the attack only are they accessible to the action of disinfectant or germicidal remedies. The question of the early use of astringents with the idea of combating the inflammatory symptoms excited by the infection is decided, according to my judgment, first, by the fact that upon any inflamed mucous membrane their action not only gives rise to pain, but is capable of aggravating the process; second, by the fact that they have no specific effect on the microbes which, at this period of the disease, are out of their reach. In this relation it may be proper to state that Finger, an unmistakable believer in the specificity of gonorrhœa, says, in his book entitled "Blenorrhœa of the Sexual Organs," "injections should never be made until the inflammation has passed its acme." While, however, experience has led me to advise that injections should not be employed during the first stage of severe cases, I am free to admit that there are others of milder nature, instances frequently of a re-infection of an already chronically diseased urethra, in which the immediate employment of injections has certainly appeared to be not only not harmful, but sometimes productive of the best results.

My first experiments with antiseptic injections were made with solutions of bichloride of mercury alone. In the strengths ordinarily employed in surgery for irrigation of wounds, etc., these were found to give rise to intolerable pain, and to greatly aggravate the *ardor urinæ*, and to cause an increase in the discharge, which, in some cases, became even bloody. In weaker solutions, 1:30,000 to 1:15,000, the injections were well borne in the majority of cases, and the purulent nature of the discharge more or less rapidly disappeared, but a mucous or muco-purulent discharge remained, in many instances with great persistency. Other notes show the treatment of a considerable number of cases with an astringent combined with a mild antiseptic, the injection consisting of a solution of sulphate of zinc, two to four grains, and boric acid, ten grains, to the ounce of water. The effect produced by this appeared in no wise

to differ from that of injection of an astringent alone. For the past two years the same combination, with the addition of bichloride of mercury, in the proportion of 1:20,000, has received almost uninterrupted trial. This injection, save in exceptional instances in which it was too early employed, has elicited but few complaints of pain, and the progress of the cases in which it was intelligently and faithfully used has shown a marked contrast with that of cases treated with simple astringents, as was the rule in my early practice.

In the fore part of this year my interest was excited by a report written by Dr. Friedheim, from Neisser's clinic, upon "The Injection Treatment of Acute Gonorrhœa.[1] In this interesting communication are given the results of tests made with a large number of remedies in the form of injections, in order to decide their relative germicidal value, their influence upon the inflammatory condition, and their power of effecting the mechanical elimination of the gonococci by causing desquamation of the epithelium of the urethral mucous membrane. To give even a summary of the results obtained in these valuable and extensive investigations would carry me outside of the limits of this paper, so large is the list of agents tried, and so numerous the experiments. That which particularly struck me was the statement made in regard to the nitrate of silver. This remedy was employed in Neisser's clinic in 318 cases, giving anti-bacterial results in 237, while the failures were charged to neglect on the part of the hospital out-patients. Treatment with the nitrate in solutions of 1:4000, never stronger than 1:2000, was instituted early in every instance. The immediate effect, it is stated, was to increase the purulent character of the discharge, a result which, in the course of the next four days, was followed by a marked change in the secretion, which then became thinner, whiter, less in amount, and was found to contain more epithelium. The influence upon the gonococci is said to have been pronounced by the time this change in the character of the discharge was manifested. and they shortly afterwards disappeared completely. According to Neisser's experience, nitrate of silver stands at the very head of the list of remedies for gonorrhœa, bichloride of mercury being obliged to take second place. Not only was the nitrate found to produce such positive anti-bacterial results, and to decrease the inflammatory phenomena, but it appeared to exercise an especial influence in preventing the complications of the disease. Thus epididymitis, which, as is well known, is the most frequent of these, occurred but once in all the cases treated.

With these favorable results, obtained by such an eminent authority, before me, I decided to make some trials of treatment both in dispensary and private practice, and up to the present date have employed injections of the salt in dilute solution in some eighty cases of acute gonorrhœa. In the majority of these a 1:3000 solution was ordered, in a few a slightly weaker one, while in some obstinate cases the strength was increased to 1:1500. In a very small number of instances injections with the weakest solution, one grain of the nitrate in eight ounces of distilled water (1:3700) were used

[1] Archiv. f. Dermatologie u. Syphilographie, No. 4, 1889; and (abstract) Journ. Cutaneous and Genito-urinary Diseases, Jan., 1890.

from the time of the first visit, that is to say, during the first few days of the attack, without producing any ill effect, but also without any special benefit, except in two patients, both of whom presented every symptom of typical acute urethritis, and in these the course of the disease was strikingly modified, the inflammatory symptoms rapidly subsiding, and the discharge entirely ceasing in the course of the third week of the attack. The larger number of the cases received no injections until the stage of increase had passed, when the 1:3000 solution (gr.j to f℥vj), was employed. To make a general statement, the first effect of the injections was in the severer cases to increase the purulency, and sometimes the amount of the discharge, while in the instances where the manifestations of the disease were less intense, they appeared for the first few days to exercise little or no influence. Within the first week of their use, in almost all cases the discharge was decidedly modified, both in amount and character, becoming muco-purulent or milky in appearance, in which condition it continued for a variable length of time, in some instances only a few days, in others a fortnight or more, but in all showing a favorable disposition to subside. After the cessation of the discharge the injections were continued for two or three weeks, being made once or twice daily. When a disposition to persistency of the discharge was manifested, a stronger solution (gr.j to f℥iv) was used, and seldom failed to prove sufficient; but in three or four very obstinate cases it seemed necessary to make some further change, and in these the silver injections were alternated with either a simple astringent or with the astringent and antiseptic solution of zinc sulphate, boric acid, and bichloride of mercury, 1:20,000, the one being used in the morning and the other in the evening.

In the course of my observations, for help with which I am indebted to my assistant, Dr. H. M. Christian, but two cases were met with in which the silver injections gave rise to complaint of severe pain. In both, which were cases of moderate severity, and were using the 1:3000 solution, this was quite severe, and it became necessary to discontinue the use of the remedy. In only three of the total number of cases treated is there a note of the appearance of any of the complications of the disease. In two, posterior urethritis, with cystitis of the neck of the bladder (urethro-cystitis) developed, and necessitated temporary suspension of the treatment, and in the third epididymitis supervened. There is no doubt that the antiseptic treatment of gonorrhœa exercises a considerable control over the occurrence of these accidents. The number of cases in which I have tried the nitrate of silver injections is, however, so small, that it would be absurd to make any general statement on this point, especially in view of the fact that some few of the hospital cases were lost sight of before the termination of their attacks.

Taking my results all in all, I feel justified in saying that, from a clinical standpoint at least, the results obtained were exceedingly satisfactory, and warrant my commending the use of these dilute solutions of nitrate of silver to further trial.

Internal Treatment.—It is only quite recently that the attention of observers has been turned in the direction of investigating the effect of the

administration of certain antiseptics in the internal or medicinal treatment of gonorrhœa. Of remedies of this class, that which has received most notice is salol, which, owing to the fact that it is eliminated by the kidneys as salicin and carbolic acid, is admirably adapted for the purpose not only of sterilizing the urine, but also of making it serve the part of an antiseptic application in its passage through the diseased urethra. Prof. J. William White, in a paper entitled "A Method of Applying Antiseptics in the Treatment of Recent Anterior Urethritis," read before the American Association of Andrology and Syphilology in June of this year, speaks highly of a combination of salol with copaiba and cubebs, given in capsule form. My own experience with the drug is as yet too limited to permit of an expression of opinion, but I trust to be able to communicate something about it on some future occasion.

Boric acid is another antiseptic which, administered internally, has been shown to possess the power of rendering the urine sterile, and on this account was recommended for the purpose of preventing urethral fever following operations upon the urethra by Dr. E. R. Palmer[1] some three years ago. Having administered it with entire success in a number of urethrotomies, I tried the drug in a few cases of gonorrhœa, but found that it produced no effect whatever upon the disease.

There is one class of remedies, the balsamics, which includes copaiba, cubebs, sandal-wood oil, and others of less importance, the value of which in the treatment of urethritis cannot be doubted. That their action is due to their antiseptic power, be that what it may, is more than probable. Finger believes that they have a direct "parasiticide effect upon the gonococci." Clinical evidence points clearly in that direction.

The plan of treatment which I have followed for some years past has been essentially that which was taught by Prof. White, formerly my chief at the University Hospital, and has consisted, first, during the earliest stage of the disease, in the administration of an alkaline sedative mixture, with the purpose of alleviating the scalding caused by urination, the tendency to frequent micturition and to chordee. The standard formula in my dispensary practice has been:

℞	Potass. acetat.,	ʒiii-ʒss;	
	Potass. bromid.,	ʒiss;	
	Acid. boric.,	ʒij ℈ij;	
	Tr. belladonnæ,	♏xxx;	
	Liq. potass. citr.,	fʒviij.	M.

Dose, ʒss in water every 3 or 4 hours.

Secondly, as soon as the symptoms were in a measure relieved, the administration of either oleoresin of cubebs and balsam copaiba in capsule, or of cubebs alone in powder, in teaspoonful doses, or finally, where chordee was troublesome, a combination of two parts by weight of powdered cubebs and one part of bromide of potassium, given in the same doses, and from three to four times daily.

The treatment of posterior urethritis will be taken up in another paper.

[1] American Practitioner and News, 1887.

FALLACIES IN CONCLUSIONS AS TO THE EFFICACY OF THERAPEUTIC MEASURES FOR THE RELIEF OF EPILEPSY.

By Theodore Diller, M.D.,

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"Their name is legion"—the drugs, surgical, hygienic, and dietetic measures which have been used, abused, then disused for the relief of that protean malady—epilepsy. It would be useless to recount them here—the student of neurology is familiar with them.

It will readily be conceded that much of the difference of opinion which existed in the past as to the value of any given measure in the treatment of epilepsy arose from the fact that many convulsive seizures were called epileptic which we do not now classify as such. I need only mention, as examples, uræmic, hysterical and infantile convulsions. Since the advent of the era inaugurated by the researches and studies of Broca, Hughlings-Jackson, Ferrier, Schaeffer, Mynert and Horsley, the definition of the term "idiopathic epilepsy" itself has become much more restricted. Convulsions (including Jacksonian epilepsy), arising from definite demonstrable somatic causes within the cranium are each year coming to be recognized by a larger number of medical men. To that great student of convulsions, Hughlings-Jackson, whom Ferrier acknowledges foresaw and predicted, from clinical observation alone, many of the facts of cerebral physiology, which Ferrier afterward, by his experiments, established as facts, we owe the greatest impetus which has been given toward careful and analytical methods in the study of convulsions.

Certainly a most critical examination of each case of epilepsy coming under the physician's care should be made with the view of determining the possibility of the seizures being caused by a gross intracranial growth or diseased process. Data given by the patient or his friends are often so meagre, unsatisfactory and unreliable that little dependence can be placed upon them. It is not enough to examine a patient carefully at the first interview, determine that he really has idiopathic epilepsy, inaugurate the treatment and then have it carried on after a routine fashion. The friends should be instructed to make accurate observations upon all the subsequent seizures. They should be especially charged with the importance of noticing whether or not the convulsions are limited to a part of the body, or commence first in one limb or group of muscles. Questions should be directed to patient and friends from time to time

with the view of not only ascertaining the accuracy of their previous statements, but of eliciting further information. We know that it is true that when we are told *what* to look for, our observations are of more value generally, and we are surprised ourselves in noticing what had previously escaped our attention.

After we have carefully examined a case of epilepsy and are unable to find a demonstrable cause for the convulsive seizures, and are forced to call it "idiopathic," what facts should we learn concerning it which will be of value in forming an opinion as to the efficacy of a therapeutic measure directed toward its relief? The following method of inquiry, I think, will be found to be generally useful. Let us ascertain,

1. The age.
2. Sex.
3. Occupation.
4. Family history.
5. Personal history.
6. Physical and mental characteristics of patient. Under this head we should ascertain whether or not any morbid psychological phenomena, such as somnambulism, or maniacal paroxysms, are to be noted. The general, mental and moral status of the patient should be observed, any deviation from normal being carefully recorded.
7. The natural history of the disease itself, including the character of fits. Under this head we will note the beginning of the disease, its natural course, *i. e.*, (*a*) frequency of attacks since the first one; (*b*) character of them (*grand* or *petit mal*, nocturnal or diurnal); (*c*) phenomena preceding the attack (aura, maniacal or other mental disturbance); (*d*) phenomena accompanying fit (discharge of urine or feces, seminal emissions, biting of tongue); (*e*) phenomena following the attack (somnambulism, automatism, maniacal excitement, depression, other evidences of mental unstability).

As the result of my observation of not an inconsiderable number of epileptics, I am convinced that an accurate observation of the natural history and character of the fits in each case is of great value in making up an opinion as to the value of any method of treatment. Some epileptics will have fits with great regularity, *e. g.*, one every two or three or four weeks; others two or three fits within a few hours every week or month, or three months; others will have three, four, five, six or even a dozen in the space of a week or two, then be free from seizures for two, three or four months, when another series will occur; others have these seizures at any and all times. In some patients the character and severity of one fit as compared with another is about the same; in others, this feature varies a great deal. Some will have diurnal seizures and be free from nocturnal fits; in others, the converse will be true; in still others there will be an equal or unequal number of each. Some patients will have attacks of *grand mal* only, others, of *petit mal* only; still others (this fact is, I think, not generally known), will have both *grand* and *petit mal*.

After we have learned of the character, severity, frequency and natural history, in general, of the fits for, say two years previously, we then have data

upon which to go in forming an opinion as to the value of the treatment. The points to be observed concerning the treatment will be its effect upon

1. The character of the fits.
2. Their severity.
3. Their frequency.
4. Their natural history.
5. The mental and moral status of the patient.
6. The physical health of the patient.

If we make a dam of clay across a small brook the flow of water below that point is, for a time, stopped. This, I have thought, is about the way some of our remedies act in epilepsy. Now, when the water accumulates above the dam in sufficient volume, it flows over the dam, and the stream below soon regains its natural volume. So with the epileptic fits. As soon as the water begins to flow over the little dam, we can again stop it by adding more clay to our dam. So in the case of our epileptic. We can again stop the fits by increasing the dose of medicine. Again the water reaches the top of the dam and pours over. Precisely so with the epileptic. The increased dose of medicine averted the fits only for a little longer time. But in the case of the epileptic we are apt, in time, to remove the entire dam. Then the accumulated fits come down It seems that all the penned-up nervous energy must, sooner or later, become manifest. The convulsive force that becomes manifest after the therapeutic dam is removed may manifest itself in a small number of fits of great severity or a larger number of less severity. It is only necessary that the dammed-up convulsive force *somehow* must be exhibited. While I am not prepared to say that this parallel is true, I have at times felt that it is correct—at least as applied to certain cases.

After we have become perfectly familiar with a case of epilepsy, we are prepared to note the value of our remedy. We might ask, concerning its effect:

1. Does it lessen the number of fits? To give the correct answer to this question, the remedy should be given for about a year. It will not do to base conclusions from its operation during two or three months, for the apparent results might be very misleading. In some cases we know that there are, in the natural history of the case, periods of absolute or comparative freedom from seizures. These periods are sometimes as long as one, two, or even four or five months. Now, if in an epileptic, in the natural course of whose disease such long periods of freedom from attacks occurred, were to be put upon anti-epileptic treatment immediately after the occurrence of a number of seizures, which ushered in his natural period of absolute or comparative freedom from attacks, would not the value of the treatment be over-estimated? I mean, if the report were made after a course of two or three months' treatment. On the other hand, if, in the same case, treatment were begun near the close of the period of natural exemption from fits, and just before the natural time for the occurrence of a series of paroxysms, would not this report on the value of the remedy be also premature, if it were made after a length of treatment equal to that in the

first instance? Of course, the larger the number of cases treated for a short period, the smaller will be the sources of error from these causes.

There is another reason for persisting in the treatment for the length of time I have mentioned (I am speaking only of therapeutical agencies other than surgical interference). Trephining, or any other severe surgical operation, will, in most cases, lessen the number of fits for a time—probably because of temporary shock, or revulsant effect on the ganglionic centres. I think a number of drugs have the same effect, *i. e.*, they have a quieting influence upon the unstable cerebral ganglionic centres, by whose "discharge" the epileptic fit occurs. Gradually the system accommodates itself to the presence of the drug in the circulation—in other words, tolerance is established, and the drug has lost its force. If this be true, it will be readily admitted conclusions as to the efficacy of the drug after a few months' trial are premature and misleading, even when a large number of cases are brought under treatment.

I made a report upon the action of acetanalide in epilepsy after a trial of it in nine cases, covering a period of four months.[1] The cases were all of so-called epileptic insanity, and were treated in the Danville, Pa., Asylum, where the patients were under constant surveillance, so that all fits were carefully noted (as they are there in all cases). The result of this study showed that the drug lessened the number of seizures from 25 to 75 per cent., as compared with five previous months, during which the patients were upon bromide and tonic treatment alternately. I kept up the treatment for four months longer after publishing that paper, and was much disappointed in observing that the drug did not exert nearly as great an apparent benefit during the second period of four months as it did during the first period of that length. The theory I have given is the only explanation which occurs to me.

2. What is the effect upon the character and severity of the fits? This is an important consideration. Is it desirable to reduce the average number of fits from three to one a month, if, in that one fit, we observe a seizure of three times the usual severity? It is doubtful whether this is to be wished for. Yet the question must be decided in each case. If this condition of affairs be brought about, can our remedy be said to be successful? I think careful observations should always be made upon this point. I am sure that it is not an uncommon occurrence. It should also be noted whether nocturnal or diurnal, *grand* or *petit mal*, becomes more or less frequent.

Changes in the phenomena preceding, accompanying or succeeding the fit should be noted. We also ought to know the effect the drug has upon the epileptic manifestations other than motor explosions, *i. e.*, upon the psychopathic phenomena which occasionally occur instead of the ordinary fit.

3. What is the effect upon the mental and moral status of the patient? Is our treatment successful if we are able to cut off 50 per cent. of the fits (without a compensatory increase in severity of those which still occur) at the expense of notably obtunding the intellect and stultifying the moral sense? This is a consideration of the highest importance. In spite of the recent opinion of

[1] Therapeutic Gazette, June, 1889.

Seguin[1] to the contrary, I am strongly of the opinion that epileptic insanity, or terminal dementia, may be hastened, if not actually induced, by the wholesale and indiscriminate use of bromides. I have seen epileptics, taking moderate doses, so much under the influence of bromides as to be very notably stupid and lethargic.

4. What is the effect of the remedy upon the general physical health? Is a remedy successful which will cause the patient to experience a fewer number of fits, but which deranges the digestive apparatus, produces skin eruptions, retards or impedes the action of the excretory apparatus and induces a general lowering in the tone of his general health? Certainly these elements should enter into our estimate as to the value of our remedy.

Perhaps I have conveyed the idea that I am an absolute pessimist as to the value of all therapeutic measures directed against epilepsy, yet I do not wish to be understood as occupying this position. The object of this paper is to present a few words of caution against forming too hasty conclusions as to the value of any treatment, to plead for more extended and careful trials of new remedies and for more critical observations of the phenomena as they present themselves in each patient. The point recently emphasized by Seguin,[2] that epilepsy is not an entity, but that each case requires individual study and treatment, should be constantly kept in mind. Some time ago I was able to discover two cases of Jacksonian epilepsy in patients I had at first looked upon as being subjects of the idiopathic type. In one of these cases it is possible that an operation may do much good. Certainly the history of the treatment of epilepsy (in many respects lamentable) should teach us to be more cautious and wary in announcing results. By all means, let us have a fair trial of antifebrin, antipyrine, borax, chloral, bromide of gold, and the other newer remedies, but let us handle the subject with more care than we have done in the past.

As to the much-vexed question of eye-strain as a factor in epilepsy, let the ophthalmologist and the neurologist work carefully and systematically together, and the correct solution of the question will be all the sooner reached.

[1] New York Medical Journal, April 5th, 1890.

[2] Loc. cit.

SOME CLINICAL REMARKS ON DYSENTERY.

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A Clinical Lecture Delivered at the Philadelphia Hospital.

These specimens, which I am able to show you, with the cases recently under my observation, will form the basis of a few remarks which, I trust, will be of some value.

I have here a large intestine, including the rectum, of a case of so-called dysentery. You will see the intense injection of the mucous membrane, portions of which are covered with pus and mucus, and here and there with blood-stained mucus, or particles of blood. The folds of the mucous membrane are the seat of abrasion and superficial ulceration, limited only to the uppermost layers of the membrane. When these ulcers are cleaned they are seen to be grayish in color. They vary in shape, but usually take the direction of the folds of the mucous membrane. The solitary glands are enlarged, and here and there we see small, round ulcers, with grayish floors. The mucus-like material covering the ulcers is really a croupous exudation, and this form of inflammation is known as "croupous inflammation." In this other specimen the mucosa is deep red, swollen and infiltrated. Mucus and dark grumous or bloody material cover the membrane. Instead of small ulcers, we see here deeper ulcers, with darkened floors and irregular, often overhanging, edges. The ulcers are large, and in some places have extended to the muscular coat of the bowel. The solitary glands are enlarged, and nearly all of them are the seat of ulceration, and most of the ulcers are deeper than in the other specimens, while the exudation covering them is darker. The threads of membrane or of tissue, easily removed from the edges of the ulcers, emit an odor distinctly indicating necrotic process. In this instance the ulcerations are scattered throughout the large bowel, and are most extensive in the cæcum. On the one hand the swollen, dark-colored, heavy mucous lining contrasts strongly with the injected, superficially-ulcerated membrane. Both are examples of the same pathological process, differing only in degree.

The microscopical examination and bacteriological study of the exudation is of interest. We learn that the contents of the bowel, or the covering of the mucous membranes, is composed of pus and blood, and that when a high objective is used bacteria are seen in abundance, and, as has been demonstrated recently, large amœbæ. Well-teased specimens from the more intense inflammations, in addition to the presence of pus, blood and the characteristic bacteria and amœbæ, exhibit shreds of tissue and the structural remains of the mucous membrane. Now, the presence of blood and of pus is not of much

significance. They simply indicate the occurrence of intense inflammation in the large bowel. The presence of the bacteria and the amœbæ are, however, of specific interest. While bacteria of all forms are common to inflammations of the intestinal tract, the varieties found in dysentery are pathogenitic, and when the usual bacteriological methods are employed, they indicate the presence of a specific micro-organism—a micro-organism, moreover, which is not present in any other form of inflammation. While, however, the abundance and variety of the ordinary bacteria render their differentiation difficult and conclusions as to their specificity not positive, such is not the case with reference to these amœbæ, whose association with, and causal relation to, dysentery have been carefully studied by Hlava and Kartulis, who were the first to discover them, by Koch and other observers.

In tropical dysentery these low grades of animal life are peculiar. It has happened that a series of cases of dysentery, some without complications, others with liver abscess, have been under observation in Johns Hopkins Hospital, and Prof. Osler, and also Dr. Lafleur, have been able to find the characteristic amœbæ in the discharges, as well as in the pus from the hepatic abscess. Their observations have been published in the Johns Hopkins Hospital Reports, and the amœbæ are thus described :

"There are found in the stools numerous actively moving amœboid bodies, varying considerably in size, the average being 5–7 times the size of a leucocyte. The bodies were of a very pale bluish-green color, and contained from one to many small vacuoles surrounded by fine and often highly-refracting, granular particles, the whole being invested by a homogeneous outer zone, looking like finely-ground glass.

"The movements were rapid and flowing in character, the initiative being always taken by the homogeneous outer layer, which was at first slowly projected from some part of the surface as a hemispherical knob, and into which the granular centre of the body then flowed with a sudden, rapid motion. When at rest the bodies usually assumed a circular or oval outline. In some it was impossible to make out a circular nucleus. The number of amœbæ varied greatly with the different specimens examined."

I have stated that in no other forms of inflammation has this peculiar body been found. It is not positive, as yet, however, what relation etiologically it bears to the disease. The fact of its occurrence only in dysentery is significant, and it is striking to find its presence in abscesses apart from, but secondary to, the original seat of inflammation. It is clear, until further researches are made, that only a diagnostic value can be attached to the presence of the amœbæ in the intestines, or in pus derived from the liver. Of this value for diagnostic purposes we will take occasion to again speak.

From the morbid anatomy of croupous inflammation, or, if you please, bacterial inflammation, of the large bowel in man, just demonstrated to you, one can readily infer the symptoms of this affection. From the presence of the inflammation in this locality, of course, local manifestations, due to irritation of the mucous membrane and muscular coat of the bowel and the nerves of these structures, would be inferred. From the presence of the bacteria, or the evidences of microbic inflammation, one would be lead on to the further inference of general symptoms allied to the phenomena of all blood infection. Of the local symptoms,

the occurrence of increased frequency of the movements of the bowel, at first with ordinary fecal discharges, and then with discharges of blood and pus and mucus; the occurrence, with this increased action, of pain, on account of the constant presence of irritation or inflammation; the occurrence of tormina and tenesmus is to be expected, and is most characteristic of the affection. The general symptoms of blood infection vary with the intensity of the process. In the milder forms, where the inflammation is not great, and the growth of microbes not profuse, general infection occurs in a minimum form, and in some cases no general symptoms arise. The more marked the severity and intensity of the local process, the richer the growth of micro-organisms, the more likelihood of blood infection and the possible outbreak of grave septic symptoms. Hence rigors and fever, with headache, backache and general malaise, are common. As infection becomes greater, the nervous system becomes affected, excretions are retained, and that low type of disease associated with profound disorganization of the blood arises—the typhoid state. Typhoid dysentery is a representative, therefore, of a malignant form of this affection. It is not very difficult to trace these local and general symptoms to the morbid appearance of the disease, or clinically to recognize the occurrence of dysentery. The local symptoms are paramount in the milder forms. In the graver forms, when the susceptibilities or sensibilities of the patient are blunted by the typhoid state, or, possibly, the terminal endings of the nerve are destroyed by the ulcerative or infiltrating process, the local symptoms are less marked and the general manifestations more striking.

We have here a patient who, for two days prior to admission, has had a diarrhœa with slight pain and moderately sized but insignificant fecal discharges, semi-fluid in character. To-day the discharges increased in frequency, and have been attended not only with the colicky pain of two or three days ago, but with severe local burning pain in the rectum, followed by extreme tormina and tenesmus. As soon as the patient has an evacuation there is straining and a further attempt at a discharge without result. The discharges now are small in amount, of a bloody and mucous character, and little feces is visible. To-day there is slight fever, the temperature rising 100½°; but there has been no reaction whatever, and no general symptoms save exhaustion, on account of the frequent discharges and the severe pain. As we have anticipated, the inflammation is local, and as yet, at least, there is no infection of the system. The patient, a healthy young adult, can well bear such a drain, and with proper treatment will soon recover.

Not so, however, with the second patient, a woman 60 years of age, who one week ago was seized with severe diarrhœa. The discharges were watery, fecal and attended with a considerable amount of colicky pain. There was no fever present at this time, and, save a moderate amount of prostration, no general symptoms. On the third day the patient had a slight chill, followed by a rise in temperature and with it increase in local pain. With it there was almost constant desire to have movements of the bowels, and the repeated efforts at evacuation resulted only in the discharge of small amounts of mucus

and blood, attended with severe tenesmus and tormina. Each day the fever has increased in intensity, so that to-day, the sixth day of her illness, the temperature has risen to 103°. Each day the general symptoms become more marked. With the high temperature which is present the typhoid state has now developed. There is delirium at night, the tongue is dry and brown, and is protruded with difficulty on account of its tremulousness. With the night delirium there is some subsultus. The skin is hot and dry. There is no appetite, and occasionally there is slight nausea. Some change has taken place in the local symptoms in the last twenty-four hours. There is less pain now; only occasionally is there tormina or tenesmus. There is, however, more or less constant discharge, not of mucus, but of the dark fluid, of a most sickening odor, containing apparently dark coagula of blood. There is almost entire loss of the retaining power of the bowel. The absence of pain and the gangrenous odor of the stools are indicative of the deep-seated gangrenous inflammation of a severe type of dysentery. In addition to the typhoid state there has developed within the last twenty-four hours a swelling in the parotid region, and here you see readily outlined the large gland, the seat of septic inflammation. The surface is tense over it, and the spot is tender to the touch. If exhaustion does not ensue too soon, suppuration will in all probability take place in this gland.

In these two cases you have types of dysentery as seen in this climate. In southern climates malignant forms of dysentery are more common. In this climate it is more usual to see forms like the first just indicated. In southern climates bilious symptoms, so called, or, at least, gastro-duodenal disturbance are most common, and "bilious" dysentery is seen very frequently. The attack begins or is attended by the vomiting of the contents of the stomach and of bile. A slight jaundice sometimes attends it, and the discharges are combined with considerable amounts of bile.

The recognition of dysentery is not usually difficult, yet there are sometimes circumstances which render it so. Its occurrence in early life is quite common, and it may be confounded with the rare but very grave affection, intussusception of the bowel. If due attention can be paid, however, to the evolution of the symptoms in the latter affection, or, rather, I should say, if the onset is not too sudden and the tenesmus arise too early, the lesion may be readily apparent. The little child in both instances suddenly may be seized with pain and with increased movements of the bowel. In dysentery, fever begins at once; in intussusception, it does not arise until later in the affection. In dysentery the bloody, and mucous discharges are mixed with discharges of feces, usually having the characteristic appearance of cooked spinach, or there are little fecal masses intermingled with blood and mucus. In intussusception, if the bowel has been emptied of feces there is no discharge except of blood or of mucus. With the immediate onset of the disease in intussusception there is usually the discharge of a small amount of blood, but the discharge of mucus does not occur until after twenty-four or forty-eight hours. During the interval there may be no discharge whatever of blood, but simply ordinary diarrhœa.

With the onset of intussusception usually a tumor can be detected on palpation. To ascertain the presence of this is of the highest importance. It should be looked for, as I believe it is usually because of the lack of this custom that intussusception is overlooked. It should be the custom to examine with the hand the abdomen in all cases of diarrhœa. Under these circumstances the so-called "sausage-like tumor" may be generally found if sought for early and usually in the position of or neighborhood of the ilio-cæcal region, where, as you know, intussusception most frequently occurs. In dysentery, moreover, there is no tenesmus without some, even a very slight, discharge of mucus or blood; in intussusception the most intense paroxysms of straining and bearing down occur without any evacuation whatever. These paroxysms of tenesmus are most severe; there is no discharge of blood or mucus. The occurrence sooner or later of tympany, with tenderness of the abdomen, with cessation of fecal discharges, but with the occurrence of vomiting, followed in a short time by the rapid development of depression or collapse, leads one to surmise the presence not of a specific inflammation, but of a mechanical derangement of the intestinal canal.

Permit me to refer for a moment to a case which occurred recently, in which the symptoms just detailed were most marked. The infant, nine months old, was suddenly seized with a series of contortions and crying, the former not unlike those of a spasm, but when carefully observed it was readily seen that the movements were due to pain, and that the pain was in all probability in the abdominal region. It persisted, and at first was attended with diarrhœa. With its onset, which was very sudden, there was a slight discharge of blood. Fecal discharges then began. After the bowel was free of feces, small amounts of mucus and blood were discharged, both rapidly increasing in amount. On the third day a tumor was evident, but did not persist longer than twelve hours, increasing tympany having hid it from view. The intense paroxysms of pain with severe straining continued. All efforts were futile. Nothing was discharged, and each effort only aggravated the succeeding one. Local examination did not show the presence of any foreign body or any protruding intestine. My associate, however, thought the symptoms were sufficient to establish the diagnosis of dysentery, and hence urged the importance of delay before resorting to an abdominal section. Forced enemata and injections of air were used, but without success. On the sixth day the features became sunken, the extremities cold, there was some vomiting and great tympany, and yet no tenderness or evidence of peritonitis. Twenty-four hours later convulsions ensued, followed by death.

While, therefore, in childhood we are often put to the necessity of distinguishing between these grave affections, in adult life this is not often the case. There are, however, local causes for the development of symptoms similar to dysentery. Thus, for instance, hemorrhoids, the presence of a foreign body in the rectum, the pressure on the canal by enlarged prostate gland, or a displaced uterus may cause, and frequently, too, local symptoms closely allied

to dysentery. Similarly, too, the presence of impacted feces in the rectum will lead to dysenteric symptoms, and not only to local symptoms of dysentery, but, strange to say, if allowed to continue, the presence of impacted, irritating masses will cause by pressure a true ulcerative enteritis.

Time will forbid my detailing to you a case of this character; suffice it to say that in the patient, a young woman, after confinement, and possibly pressure of the uterus on the rectum combined with the neglect to have an evacuation of the bowels, dysenteric symptoms ensued. The attending physician thought it was an attack of dysentery, and efforts to check the movements were used. They were checked; the impaction became more and more marked; the internal pressure on the mucous membrane and the accumulation of hardened lumps in different parts of the large bowel caused ulceration of that structure and gave rise to the appearance, on palpation and percussion, of large numbers of tumors in the abdominal cavity. The relief of the impaction and the evacuation of the bowel higher up gave relief at once to the dysenteric discharges, although for a period of many months blood and mucus were commonly seen in the thin fecal stools. Only a year afterward was the patient able to follow light occupation and partake of a most easily digested diet; any indiscretion would be followed by evacuations of mucus and blood.

Inflammations of the rectum and colon of non-specific origin, as is readily seen, can be diagnosed by the examination of the discharges. If the amœbæ are characteristic of tropical or specific dysentery, they should not be found in cases of proctitis or colitis from other causes. You can therefore see the value of the detection of them in the stools. It was my good fortune to see one of the cases Prof. Osler had under his care, and on return to my service in the Philadelphia Hospital I began to look for amœbæ in the dysenteric cases. There were no cases in my ward, but in the ward of my colleague there was a case, in the stools of which I readily found the amœbæ.[1] Since then the stools of two patients in private practice showed their presence. The care that Dr. Lafleur insists upon is necessary to succeed in the examination. The stools must be passed in a bed-pan, previously warmed, and the examination made immediately after the evacuation. Small, grayish-yellow pus collections picked from the brownish fluid of the stool contained the most active and abundant amœbæ.

The presence or absence of the amœbæ in the stools may be of service in distinguishing true dysentery from proctitis due to local irritation from foreign body or the irritating presence of hemorrhoids or carcinoma. These local morbid processes must be thought of in the study of a case of suspected dysentery. As the possibility of the occurrence of intussusception in early life makes it important to consider its presence in a case with dysenteric symptoms, so in later life a common local affection of the rectum or the large intestine which causes dysenteric symptoms must be considered. It is true such symptoms usually extend over a long period of time, but enough cases occur to lead one to be cautious; they may arise suddenly and simulate an acute process. In carcinoma of the rectum or the lower portion of the colon, bloody and mucous

[1] First case in a series since reported by Dr. Stengel.

discharges occur with tormina and tenesmus. While there is a discharge of what appears to be feces alone, and often the motion is formed, although compressed or ribbon-shaped, frequent desire to evacuate the bowels with straining, but without any result, is significant. So frequently cases of carcinoma have been thought to be dysentery, that it is important to impress upon you their occasional similarity. Indeed, twice in my own experience I have been asked to see cases of alleged dysentery which proved to be malignant disease of the bowel. Another fact to be borne in mind is that in cases where the course is protracted and in which you have not been led to make a local examination early in the case, you may, if the person is aged, be justified in fearing the presence of malignant disease.

It is not sufficient for therapeutic measure to make a diagnosis simply of dysentery. Indeed, symptoms of this affection occur secondary to general processes and yet so thoroughly mask this process, often on account of the intense local symptoms, that the primary affection may be overlooked. I refer to the onset of dysenteric symptoms in the course of any of the septic diseases. Thus in septicæmia, or in endocarditis of the ulcerative variety, often, too, in pneumonia, colitis is associated. Particularly in the former affections it may be the most marked local process. So, too, in the course of scurvy, dysentery may arise. If the circumstances were favorable for the development of scurvy, one would not be liable to be mistaken, but in rare cases of land scurvy, or in scurvy in subjects in whom one would scarcely think it possible to arise, the mistake can readily be made. Indeed, the most instructive lesson that ever occurred to me was of this nature. The patient was ill for some time with undoubted entero-colitis, the fever was not very marked, the general symptoms not grave save a sense of prostration, while the entero-colitis persisted without relief afforded by any form of treatment. Curiously, the patient, a physician, and myself discussed the condition of the gums, which we knew were tender and spongy, and yet the relation between the gums and the bowel trouble did not strike us. Our friend, Prof. Wood, saw this, however, and we readily concurred in his suggestions of the possibility of scurvy, in spite of the fact that this was hardly to be surmised from the surroundings and habits of the patient.

A knowledge of the morbid anatomy and pathological processes of dysentery suggests the line of treatment which empirically has been established as the best. That is one which involves local depletion of the inflamed parts, and the removal of the specific irritant, which is evidently some microbe, causing the inflammation. This is done, as is well known, by the use of purgatives. Salines are usually employed, and in adults are probably the best form of this medication that can be exhibited. In children, castor oil in small quantities, or the spiced syrup of rhubarb, is preferable. In the adult, a dose of Epsom salts every morning and evening, with an anodyne to quiet the pain, or the use of citrate of magnesia in repeated doses, until there is a copious fecal motion, will usually bring about a curative result in most instances. In children, a combination of castor oil with small doses of opium appears to afford the speediest relief, preferably a mixture of castor oil, so that fifteen drops

will be emulsified in a drachm mixture. For a child of 2 years this seems to be the most effective when combined with one or two drops of deodorized tincture of opium to each dose. It should be administered every two or three hours. The dose can be graduated according to the age. It will usually cause immediate relief. On account of the chills and chilliness followed by fever, as is the custom with a number of my colleagues in the vicinity in which I practise I have been accustomed to use quinine with a laxative. The following prescription has seemed to fulfill all indications, and in a short time give satisfactory relief:

℞	Quininæ sulphat.,	gr. ij	
	Ext. opii,	gr. ½–¼	
	Mass. hydrarg.,	gr. ½	M.

Ft. Pil. No. I.

Sig.—One or two every two or three hours.

The systemic depression is relieved by the quinine; the opium relieves pain, as well as stimulates; the mercurial gently excites a natural movement of the bowels. In twenty-four or thirty-six hours the general symptoms subside, and the local tormina and tenesmus are relieved. Quinine, with smaller doses of opium, is then of service, and bismuth may be added to the compound.

While this treatment is most satisfactory, and usually results favorably, there are some cases which, in spite of local depletion, persist. They seem to be associated from the first with certain influences indicating the occurrence of profound depression, and hence the need of some line of treatment which is not depletory, and yet serves to remove irritative mucus and pus, and at the same time stimulate the system. Hence the indication for quinine. I believe that my friends who use the prescription will testify with me that it is the quickest way to get speedy relief with the least prostration of the patient. Ipecacuanha also seems to be of the greatest service; it has even been vaunted as a specific, and has undoubtedly a remarkable influence in controlling specific inflammation of the colon. How it acts we are thus far unable to determine. All observers agree that it has this power, and yet all agree that it is not necessary to give it in every case. A case somewhat like the following may indicate to you the variety of cases in which its use is necessary: The patient was a middle-aged woman, who had exerted herself unusually during ten hours of the day on which her illness began. After this exhaustion she was compelled to go a considerable distance from home, and to pass through a crowd which had collected at some exhibition. Her pocket was picked at this time, and she experienced a most decided shock when she found that the small savings of several days hard labor had been lost. She reached home, scarcely knowing how, and was immediately seized with a severe chill, followed by fever; at the same time diarrhœa set in. She did not improve during the night, and next day took saline cathartics, and then castor oil, without relief. I saw her on the third day, when she was much depressed, with weak pulse, cold extremities and pale face. She seemed anxious, and was troubled about the loss of her money. During the day she had two or three dysenteric discharges every hour. Ipecacuanha was administered this day, and for two days subsequently, accord-

ing to the directions of Woodhull, with the most prompt relief of the serious general symptoms and the intense local tormina and tenesmus. You know it is better to give thirty or forty, or even sixty, grains of the powder and repeat the drug in a smaller dose in twenty-four hours, again repeating the larger dose if no relief is obtained. To prevent the vomiting, which is liable to arise, the patient must assume a recumbent position, must have a mustard plaster upon the pit of the stomach prior to the administration of the drug, and half an hour before take fifteen to thirty drops of the deodorized tincture of opium. Ten grains of the ipecac may then be used at intervals of four hours, similar precautions of less degree being used to prevent vomiting. Frequently the patient to whom the ipecacuanha is administered receives all the medicine within forty-eight hours.

It is scarcely worth while to refer to the treatment of the general symptoms. The indications that arise usually require the use of stimulants and tonics and carefully selected diet, obedience to the command to rest in bed, not even having a motion outside of the bed. The bed-pan should be used. Quinine may, and often must, be administered either as suggested formerly, or in very large doses, as is customary in the South. If scurvy should be the exciting cause the treatment should be entirely different. In the case just mentioned we doubled the amount of astringents that had been used, and in addition put the patient on the diet which should be advised in this diathesis. It, therefore, is desirable to give lemon juice, and to allow, long before it would be attempted in other inflammations, the use of a mixed diet, and one of vegetables particularly.

MEMORANDA.

PYOKTANIN IN DISEASES OF THE EYE.

For some two or three months I have been testing the value of pyoktanin in the treatment of superficial ocular inflammations, and by request give in brief and in general my conclusions.

In almost all cases I have used the blue pyoktanin of Merck's manufacture, and in a solution of the strength of 1 to 1000. Where it has been possible or advisable, I have treated one affected eye with the pyoktanin, the other being synchronously treated with either nitrate of silver or bichloride of mercury in varying strengths according to the exigencies of the case. Although applications were made in a number of different diseases of the lids, conjunctiva, cornea, etc., the results have been so indefinite in many that I shall offer an opinion as to the value of the drug only in two or three diseases.

In trachoma I have found pyoktanin without noticeable effect. Stilling, of course, has not advised it for this affection, but among other diseases I continued to make applications in several of these cases until convinced that it was useless. I am not sure that, if any at all, its action was not injurious, due to a certain hydroscopic or desiccating effect, not very pronounced, that I think I have noticed in a number of cases.

In gonorrhœal ophthalmia I had an excellent opportunity to test the preparation in the case of a patient, both of whose eyes were about equally affected, and who came under my care when the disease had, by previous neglect, already progressed almost to a fatal degree. The eyes were each thoroughly cleansed, and in one strong solutions of nitrate of silver were used, in the other, pyoktanin. At the end of a week it was plain that the nitrate had been the most effective and trustworthy. This is but a single instance, it is true, and it would not be just to say that the pyoktanin was without decidedly beneficial action, but the experiment was so fair, both eyes so equally affected, etc., that I believe the silver was decidedly the preferable drug.

In corneal ulcerations I uniformly found other drugs, notably eserine, far better than pyoktanin. Most of these cases so treated were the circumscribed opacifications of the deep layers of the cornea, without dissolution of the epithelial surface, resulting from trachoma and pannus, and it usually seemed that the pyoktanin had apparently no effect whatever. One large ulcer, occupying a third of the corneal surface, continued ingravescent so long as the pyoktanin was applied, but reacted and healed at once under other treatment.

In dacryocystitis and lachrymal conjunctivitis the effect of pyoktanin has been extraordinarily good. I think there can be no doubt that pyoktanin, as its name implies, is a pus-killer, but whether superior to other germicides, and in what particular diseases and tissues most effective, must remain for exact experiment and extended observation to prove. But in chronically unhealthy conditions of the lachrymal excretory apparatus, I have found it to work like a charm in cleansing the channels and in drying up the abnormal secretions. When the canaliculi or ducts are closed by constriction, they may be rendered patent by the usual methods, and with pyoktanin a quick cure thus effected. But there are many cases where the obstructed outflow is in part due to the inflammation and congestion caused by the presence of unhealthy tears and conjunctival disease, and in such cases, without other means, a drop of pyoktanin in the lower conjunctival sulcus, repeated twice a day for a few days, will work wonders. To the great diffusibility of the solution this effect is doubtless in part due.

Likewise in unhealthy orbital cavities after enucleation, whether from irritation of the artificial eye or from other cause, pyoktanin is of excellent service.

Lastly, I have been surprised to find that in a certain class of corneal opacities it serves to clarify the tissue and increase visual acuity. I allude to the peculiar chronic soft leucomata, if I may so designate them, sometimes resulting from interstitial keratitis, pannus and like affections. I do not find this condition described in the books, but I think every clinician will remem-

ber many such cases in which the opacity is unlike a true scar tissue, contracted, and definitely healed, but which seems soft, unhealthy and showing no tendency either to break down or to cicatrize into the more common leucomata usually described. In such cases, the daily instillation of pyoktanin speedily clears the cloudy tissue and gives the patient the greatest satisfaction as regards vision.

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SOME OBSERVATIONS ON THE TREATMENT OF LEG ULCERS.

THE frequency with which the surgeon is called upon to treat ulcers of the leg, and the unsatisfactory results of treatment so often obtained, gives to this subject material interest, and makes the record of any large experience of value.

The surgical clinic of the Howard Hospital is particularly rich in this class of cases. The condition being of so common occurrence, and the tendency to chronicity so pronounced, one is apt to lose interest in the treatment, falling into a routine practice. It is, perhaps, due to this fact that the results are not more uniformly satisfactory.

A glance at the many different plans of treatment proposed by writers convinces one of the fact that no one is uniformly followed by good results. As a rule, the patient does not consult the surgeon until the condition has existed for some weeks or months, and the ulcer therefore usually has assumed an unhealthy form, a condition which must be remedied before healing can proceed. In those patients free from any constitutional vice, who are able to take rest, more or less absolute, and are surrounded by good hygienic conditions, we may expect to see rapid improvement.

Many of the cases seen here, however, are strumous, are poorly fed, have the worst possible hygienic environments, and rest in their cases is impossible. It is here that skill and patience are most sorely taxed, and the assistance of every means, mechanical or therapeutic, is needed.

The method of treatment pursued has been to dress the limb daily, the part having been carefully cleansed and irrigated with bichloride of mercury solution, 1–1000, or potassium permanganate solution. A simple protective or stimulating application was then made, and the limb carefully bandaged.

Iodoform has been employed in the majority of cases, and has seemed to be the most generally useful dusting powder. In one or two cases of idiosyncrasy it was not well borne, and had to be substituted by one of the other preparations.

β-naphthol was used exclusively for a time. Notes were kept of some

thirty cases so treated. In most instances such a high degree of inflammation was produced that its use had to be discontinued. In two cases the irritation was so great as to cause marked constitutional effect. In no case did it seem particularly beneficial.

Aristol was employed in a number of instances, and the effect in cases of specific ulceration was very satisfactory.

When the ulcer was dusted with a powder, as in this method of treatment, it was covered with waxed paper, protective, or oiled silk, and then the bandage was applied. Of the unguents that were employed, the iodoform ointment was most used, but this mode of application did not seem to give the best results.

In profusely suppurating cases, peroxide of hydrogen, used as a spray, was singularly efficacious.

Strapping with adhesive plaster was also employed with very good effect, but the one important addition, without which all other treatment proves unsatisfactory, is the roller bandage ; and this is really the essential factor in these ambulant cases.

It is in the application of this bandage, however, that it is most important to devote special care. Every surgeon employs the bandage, but with most varying effect in regard to the result derived, *i. e.*, uniform and continued pressure. The leg being cone-shaped, with the smaller diameter below, the tendency is for the most carefully applied bandage, of the usual form, to loosen in the movements of the muscles caused by walking. When this occurs, as it invariably does, it ceases to be a support to the soft tissues of the limb, it fails to be an addition to the treatment, and not only so, but in the cases in which the tendency to œdema is marked, certain turns becoming loose, and others remaining in place, cause circular compression, as the limb begins to fill with serum. A bandage, taught by Dr. Edward Martin, and used by him in his hospital service, known as the figure-of-8 of the leg overcomes the difficulty above described. It is applied by a circular turn above the ankle, and a second turn over this to fix the initial extremity ; it is then carried over the dorsum of the foot, and a circular turn is made at the metatarso-phalangeal articulation; it is then passed again over the dorsum of the foot and around the point of the heel, again over the dorsum of the foot, crossing the last turn in the centre, around the foot, again over the dorsum, and repeating these turns until the foot has been entirely covered, forming the "spica of the foot." Two, three, or as many spiral turns as can be perfectly adjusted are then made above the ankle ; when the increasing diameter of the leg prevents these spirals from fitting closely, the roller is carried obliquely upward across the front of the leg around its back just below the knee, and obliquely downward across the front of the limb to the point of starting, the first figure-of-8 turn covering in the last spiral reversed. The figure-of-8 turns are continued upward, overlapping two-thirds of the previous turn until the limb is covered. The pressure should be carefully graduated, and the bandage perfectly flat and smooth in every part. The form of the leg is that of two truncated cones, placed base to base ; each figure-of-8 turn having a loop on either cone, the

only chance for the bandage to slip is toward a larger diameter, which, of course, is impossible. It is to this addition, therefore, that we attribute the good results obtained.

In those cases in which the tendency to varicosity of the veins was very marked, the patient, after cure of the ulcer, was ordered to wear a rubber bandage. The bandage was directed to be washed with a solution of borax daily, and every precaution tending to cleanliness was insisted upon.

I may remark incidentally that without exception ulcers occurring on the middle or upper part of the leg in young men were specific, thus conforming to the teaching of most authorities. It is needless to say that in these cases constitutional treatment is of major importance.

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A CASE OF INTERNAL STRANGULATION TREATED BY OPERATION.

Eli J., aged 65 years, a helper to stone masons, was apparently healthy except for abdominal pains which for six months had troubled him, and were only noticed after heavy work. On the morning of Thursday, October 16th, while carrying a weight of about twenty-five pounds, he was seized with violent cramps. A hypodermic of morphia gave prompt relief; some flatus was passed, and the patient remained comfortable till the afternoon of the same day, when there was a return of pain. This was relieved by deodorized tincture of opium. On Friday the pain was severe and of a twisting nature, referred particularly to the umbilcus; there was no passage of either feces or flatus by the bowel; there was vomiting of the contents of the stomach; the pulse became rapid and feeble, and the abdomen was tender on pressure, somwhat tympanitic, with a bullet-like projection just below the umbilicus, due to a distended loop of intestine. The suffering of the patient was great, and large doses of anodyne were needed to produce even slight alleviation. On Saturday all the symptoms had become more serious. The belly was uniformly distended and tympanitic, the pulse was 144 and scarcely perceptible at the wrist, the respiration was gasping, the patient was semiconscious. Dr. Edward Martin was called in consultation and at once proceeded to operate for internal strangulation. An incision was made in the middle line of the belly, beginning one inch below the umbilicus and passing downward. The peritoneum was found much thickened. On cutting through it there was an escape of gas and of over a pint of blood and liquid intestinal contents. On enlarging the incision upward a large loop of gangrenous gut, enormously distended, could readily be seen. This distension was so great that there was no room for further manipulation, therefore the convex border of the gangrenous loop was freely incised and the contents, of the same nature as had escaped from the peritoneal cavity, were evacuted. It was now found that the gangrenous bowel, together with the contents which had escaped from spontaneous rupture, were partly encysted from the general peritoneal cavity by recent adhesion. These were scrupulously respected. The cause of the trouble was found to lie in a fibrous band, an eighth of an inch in thickness, adherent by one extremity to the parietal peritoneum, by the other to the mesentery. Through a looping of this band the gut had become strangulated. The gangrenous intestine, over thirty inches in length, was resected, its mesentery previously having been tied

across in sections. Considering the exceedingly critical condition of the patient, it was thought best to bring the lumina of the upper and lower portions of the bowel out at the lower angle of the wound, thus making an artificial anus, and occupying less time than is required even by a lateral anastomosis. The gap in the mesentery was closed by suture, the two portions of the gut were apposed and the cavity was washed, drained and closed. Very little ether was required, not upwards of four ounces having been used. Immediately before the patient was put upon the table a hypodermic of a twentieth of a grain of strychnia was given, and afterward the same drug in one-sixtieth-grain doses, together with twenty minims of brandy, was administered every three hours. After the patient was placed in bed the pulse was 120, and fuller and stronger than before operation; subsequently he regained consciousness and expressed himself as free from pain and feeling better. Twelve hours later he collapsed rather suddenly and died.

This case presented many of the classical symptoms of internal strangulation ; the violent, persistent, twisting pain about the umbilicus, the tenderness on pressure, the discovery through the parieties of a distended loop of intestine, the feeble, rapid pulse, the normal temperature, were all significant. Couple with this the obstinate constipation which resisted every remedial measure, and the vomiting, and the picture is well-nigh complete. The temporary amelioration in his condition was, no doubt, in part due to the stimulant action of the ether and strychnia, though it cannot be questioned that the removal of a large amount of fœtid liquid most favorably situated for rapid absorption, was also an important factor in his improvement. Like so many cases of this class, the one reported teaches the importance of immediate operation the moment the diagnosis is well established.

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REPORT OF A CASE OF OBLITERATION OF THE PERICARDIAL SAC, CARDIAC DILATATION AND HYPERTROPHY, WITH PULSATING LIVER.

I. G., a girl 10 years of age, was admitted to the Children's Hospital in the service of Dr. Arthur V. Meigs, on August 20th, 1890. She had been in the hospital several times before, during the past few years, with symptoms somewhat similar to those displayed upon this occasion but much less severe ; each time she had so far improved under treatment as to be discharged from the hospital, going home and remaining apparently well for a considerable length of time.

Upon her admission in August, 1890, she was extremely emaciated, and the whole lower part of her body was very œdematous ; the legs were absolutely purple from venous congestion. Her abdomen was very much distended, and manifestly contained a large amount of ascitic fluid. Her respirations were rapid and labored ; her pulse was frequent and very weak. Very distinct pulsation was noted in the jugular veins.

Percussion showed that both the heart and the liver were enormously enlarged, and auscultation revealed a loud mitral systolic murmur. Examination of the lungs gave a negative result, except that their normal area was much trespassed upon by the enlarged heart and liver.

Urine was passed quite freely, and examination revealed in it nothing abnormal at any time during the course of her disease.

The patient was put upon the following treatment: Five drops of tincture of digitalis every four hours, and a fluid drachm of whiskey and a grain of carbonate of ammonium every two hours.

On August 21st, the day following that of her admission, the child became deeply cyanosed; the jugular veins were as thick as a man's little finger, so tortuous as to appear coiled in knots, and pulsating with considerable force; her respirations were very feeble and hurried, and her pulse was so frequent that it was impossible to count it. Paracentesis abdominis was performed, and 64 fluidounces of a somewhat opaque and decidedly albuminous liquid were withdrawn.

The relief experienced was almost immediate; her breathing became much better, and her pulse presently increased in strength, and decreased in frequency.

Upon removing the canula, a small portion of what was apparently omentum followed it and protruded through the skin; it was snipped off with scissors, and the puncture was dressed with a small piece of lint soaked in compound tincture of benzoin.

A great, heaving pulsation, distinctly expansile in character, was now observed in the upper part of the abdomen, and was found to proceed from the liver; this organ, as was before mentioned, was greatly enlarged, and its lower border, with the notch, could now be distinctly felt through the abdominal wall at a point at least three inches below the margin of the ribs.

Paracentesis was performed seven times after this—whenever cyanosis and dyspnœa seemed to threaten death. Although a trocar of not more than one-eighth inch in diameter was used, several times serum continued to flow from the opening after the withdrawal of the canula, and was only checked by a tight bandage around the abdomen. The only occasions on which there was no after-flow of serum from the peritoneal cavity were four, when omental herniæ, as described, blocked up the openings. The quantity of fluid removed at one time varied from 37 to 176 fluidounces. The total amount, exclusive of 75 fluidounces withdrawn from the legs by capillary drainage tubes, was 751 fluidounces.

Under this treatment the patient's general condition seemed at first to decidedly improve; the œdema diminished, and her legs regained much of their natural color. She became well enough to sit up in a chair most of the day, and even to walk about the ward a little. She was on "house diet," and had a fairly good appetite during her whole stay in the hospital. Orthopnœa, however, was a pronounced symptom from the date of her admission; she could only rest with any approach to comfort when propped up upon her right side, thus, perhaps, allowing her heart more free motion by causing the liver to be beneath, instead of above it.

The amount of tincture of digitalis administered was at various times diminished from five drops every four hours to five drops three times a day, and then increased again to the same dose every four hours as before. The exhibition of whiskey and carbonate of ammonium was discontinued and resumed again as occasion demanded.

During the latter part of September jaundice appeared, and steadily increased in its amount. On October 6th the patient's cyanosis and dyspnœa became excessive; paracentesis abdominis and other measures failed to give any relief. Œdema was very great, and the skin and conjunctivæ showed an extreme amount of jaundice. On the 7th the child died, and an autopsy was held.

The heart was found to occupy nearly the whole of the left side of the thoracic cavity, measuring about five and one-quarter inches in breadth and about six and one-half from its base to its apex—a size one seldom sees attained even by hypertrophied adult hearts. The ductus arteriosus was present as a thick, fibrous cord. The pleura was closely adherent to the pericardium, and the pericardial sac was completely obliterated. The mitral valve was large enough to admit two fingers, without, however, allowing their separation when inserted, as in the normal adult mitral valve. But it was evident that it had been, at some previous time, even more dilated than at the time of her death, for the opening at the free edges of the leaflets was smaller than that at their attachments to the heart wall, thus forming the early stage of a "button-hole mitral valve."

The tricuspid valve was enormously dilated, admitting the points of five fingers, and small vegetations were discovered upon its leaflets; some of the chordæ tendineæ were considerably shortened, causing a looping up of those joining them; this, no doubt, must have seriously interfered with the proper action of the valve during life. Calcareous deposits were observed upon the endocardium within the left auricle, and at a distance from the valve. The myocardium was markedly fibrotic, as was evident, upon section, even to the naked eye, and there was observed in it a hemorrhagic infarct.

The lungs were congested, œdematous and small—especially the left, which was crowded upward and to the right by the enormously dilated heart.

The peritoneal cavity contained a large collection of ascitic fluid, and there was a large deposit of sub-peritoneal fat. Between the omentum, mesentery and parietal peritoneum were found numbers of old adhesions and of bands of newly deposited lymph. The omentum was found strongly adherent to the abdominal wall at four points; these, upon comparing their positions upon the inner surface of the abdominal parietes with the corresponding points upon the outer surface, were found to have been places where the trocar had entered during life, and where omental herniæ had taken place.

The liver was enormously enlarged and congested, hard and unyielding to the touch, and markedly fibrotic; the gall-bladder was filled with an almost colorless fluid.

The spleen was unyielding and firm in consistency, and considerably congested.

The kidneys were enlarged and very much congested, and the ureters were dilated and thickened.

All the organs and tissues of the body were more or less jaundiced.

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CLINICAL DEPARTMENT.

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I. EMPYEMA OF THE ANTRUM SIMULATING SOLID GROWTH.

[Service of Dr. J. WILLIAM WHITE.]

Mrs. P., aged 59, white, was sent to the hospital by her physician for the purpose of having her left superior maxillary bone removed for a tumor of that structure. The patient gave the following history: About a year previous to admission she received a blow upon her left cheek. She had a tooth extracted about this time, a portion of the root of which remained. Three months subsequently she noticed that her left cheek was swollen, and an acrid, offensive secretion appeared in the mouth. The enlargement increased, and the discharge into the mouth continued. She suffered very little pain.

On examination, the left cheek was seen to be very prominent, and the hard palate depressed. The skin was not involved. The appearance was that of non-malignant solid growth, *e. g.*, osteoma or chondroma. Although the enlargement closely simulated tumor, it is a matter of experience that a collection of pus in the antrum may give rise to this condition. Dr. White, therefore, decided to make an exploratory puncture before taking any steps toward the removal of the superior maxilla. A trocar was accordingly forced through the anterior wall of the antrum, and its withdrawal was followed by the discharge of a considerable collection of pus. The opening was enlarged with bone forceps, and the cavity washed with a saturated solution of boric acid. It is very fortunate for the pa-

tient that excision of the upper jaw was not needed, as she has mitral and aortic heart disease and contracted kidneys, so that it is improbable that so grave an operation could have been performed without serious consequences resulting.

Abscess of the antrum may result from a carious tooth, traumatism, caries of its walls, and a catarrhal inflammation of the lining membrane, becoming purulent after obstruction of the orifice, etc. Sometimes the diagnosis can be made by the discharge of pus through the nostril of the affected side. Often, however, the use of an exploratory trocar, as in this case, is necessary.

The after-treatment consisted of the free use of the boric acid lotion several times daily. The patient left the hospital in a week, the discharge having entirely ceased, and the prominence in the cheek rapidly subsiding.

II. HYPOSPADIA.

Arthur J., aged 7, a victim of this malformation, was brought to the hospital for operation. The hypospadia was of the peno-scrotal variety, and the penis was united to the scrotum throughout its entire length. Duplay's method was employed, and the first operation consisted in freeing the penis from its attachment to the scrotum, and the free transverse division of the band which united the glans to the hypospadic orifice. This allowed the complete straightening of the penis, and it was then bandaged against the pubis to maintain this position. In a few days the patient was allowed to go home, as it is inadvisable to perform the next step in the operation until a satisfactory result of the first has been assured.

In a few months he presented himself again, and, as the organ had remained perfectly straight, the second part of the operation, that of forming a urethra, was done. This is effected by tunneling through the glans with a trochar in the proper position; a flexible catheter is then passed through this opening, and along the under surface of the penis in the normal position of the urethra. An incision through the skin is now made a few millimetres on either side of the catheter, and flaps raised in both directions. Those next the the catheter need be but small, so as to partially encircle the latter, the outer flaps being more freely dissected to enable them to meet over the catheter. These flaps thus made were brought together and retained by modified button sutures. Union was obtained for one-half the length of the penis, and a third operation, similar to the last, resulted in establishing a perfect urethra. It then remained to close the hypospadic orifice, and to render the urethra continuous from bladder to meatus. This is the third step in the method. It is done by carefully freshening the edges; a catheter is then introduced into the bladder, and flaps raised, as in the second proceeding. In this case the catheter was allowed to remain three days. The result was excellent, and the patient left the hospital with a patulous urethra extending from the glans penis backward.

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EDITORIAL.

DR. KOCH'S EXPERIMENTS IN TUBERCULOSIS.

LAST August Koch announced, in an address before the Tenth International Medical Congress, the discovery of a remedy which conferred on animals an immunity against inoculation with the tubercle bacillus, and which arrested tuberculous disease. Since this date the scientific world has waited with interest further authoritative communication upon the subject. This has appeared in an article by Dr. Koch in the *Deutsche medicinische Wochenschrift*, November 14th, 1890, the translation of which is published in an extra edition of the *Medical News*, November 15th, 1890, the latter journal, with most commendable enterprise, having obtained the paper by special cable dispatch.

From this translation we learn that the publication of the research at this time and in this incomplete form was deemed necessary to prevent false impressions, and to counteract the distorted and exaggerated reports which had crept into public print. Dr. Koch reserves for a future paper the origin and method of preparation of the remedy, which is described as a brownish, transparent liquid, which does not require special care to prevent decomposition. For use, this liquid must be more or less diluted, and the dilutions are liable to undergo decomposition if prepared with distilled water, hence the diluted liquid must

be sterilized by heat and preserved under a cotton-wool stopper, or prepared with a one-half per cent. solution of phenol, or, best of all, obtained freshly-made for each experiment.

The remedy has no effect if introduced into the stomach, but when injected hypodermically in a healthy individual in the dose of 0.25 cubic centimetre, produced, after three hours, the following symptoms: Pain in the limbs, fatigue, inclination to cough, difficulty of breathing, chills, nausea, vomiting and rise of temperature. After twelve hours these symptoms gradually subsided. The smallest dose which affected a normal adult, and the effect was extremely slight, was 0.01 cubic centimetre of the liquid, equal to one cubic centimetre of the one-hundredth dilution. The same dose, however, injected into tuberculous patients caused a severe general reaction as well as a local one In children the dose is 0.001 cubic centimetre, and in very delicate children only 0.0005 cubic centimetre. The general symptoms, then, are: Rigors, fever (39°–41° C.), pain in the limbs, coughing, great fatigue, sickness, vomiting; in severe cases, an icteroid discoloration and an eruption like measles. The attack lasts twelve to fifteen hours, and afterward the patients feel comparatively well.

The local action is best studied in a visible tuberculous area; for instance, a case of lupus. A few hours after the injection the lupus begins to swell and redden, a process which goes on increasing during the fever, until the tissue may become brownish and necrotic. After a time (two or three days) the swelling subsides, the lupus-spots are covered with a soft deposit, which dries, changes to a crust, falls off in two or three weeks, leaving a clean, red cicatrix. Of great importance is the fact that the changes described are confined exactly to the lupus tissue. In the lungs the local action is not at once apparent unless increased cough and expectoration indicate this, but Koch believes he is justified in assuming that changes take place similar to those visible in lupus.

Inasmuch as the symptoms of reaction described invariably appeared after the injection of 0.01 cubic centimetre of the fluid in any organism in which a tuberculous manifestation was present, Koch believes by its aid *diagnosis* of doubtful cases of phthisis, latent tuberculosis of bone, uncertain cases of tuberculosis of the skin, etc., will be always perfectly possible.

The limit of the *therapeutic* action of the remedy is judged, according to the discoverer, by observing its effects in lupus-tissue, from which it becomes manifest that the liquid does not kill the tubercle bacilli, but the tuberculous tissue, and hence can influence living tuberculous tissue only, and not necrotic and cheesy masses. After the living tuberculous tissue has been caused to undergo necrosis, this must be removed as soon as possible; if necessary, by surgical means. Under a succession of properly proportioned doses glandular, bone, and joint tuberculosis and lupus resulted in cure in recent and slight cases, and in slow improvement in severe cases. Under still more carefully proportioned doses patients in the first stage of phthisis were freed from symptoms; patients with cavities not too highly developed improved; patients with large cavities and advanced disease did not improve.

Koch concludes by warning against the indiscriminate application of the remedy, advocates the importance of combining it with proper nursing and sanatarial surroundings, and, above all, enjoins upon physicians the importance of its early application.

This is a summary of the principal points of this investigation known up to November 15th, 1890, and which we have abstracted from the cable dispatch of the *Medical News*. It is impossible from these data to form even an approximate estimate of the exact value of this remedy. Dr. Koch's reputation as a careful investigator, and the fact that his previous work in regard to the etiology of tuberculosis has stood the test of searching criticism, attach great weight to the statements contained in his official report. Elaborate study of the method he describes and the remedy he has discovered are necessary before any conclusion as to their efficacy can be reached. To this end it is most fortunate that the University has sent Dr. John Guiteras to Berlin that he may receive from Koch himself the necessary instruction to carry out future investigations in this city, which, following Koch's own advice, will be conducted in a hospital ward arranged for the reception of consumptive patients. The special committee which has been selected by the University to pursue further investigations is composed of Dr. William Pepper, Dr. James Tyson, Dr. J. William White and Dr. John H. Musser. The wing erected by the liberality of Henry C. Gibson at the University Hospital, furnishes an excellent building for the work of these gentlemen, and in the bacteriological laboratories of the Medical Department, elaborate studies will be undertaken in connection with the clinical observations.

PEROXIDE OF HYDROGEN.

THIS is a drug which has been gradually and steadily gaining in favor, which has not been bolstered upon the profession by means of the false statements of dealers or the still more misleading reports of unscientific enthusiasts, but which has yielded to each who has faithfully tried it results so constant and so satisfactory that he has learned to depend upon it.

As ordinarily found in the shops, peroxide of hydrogen is a 3.2 per cent. solution, yielding fifteen times its bulk of oxygen. This solution is far more potent than is water charged with fifteen times its volume of oxygen, since in the peroxide preparations the gas is given off in its nascent state and is peculiarly powerful in its chemical affinities.

There is abundant evidence as to the value of peroxide both from the clinical and the experimental standpoint. The number of those who have reported excellent results from its use is very large, and to this must be added the testimony of the bacteriologists, who find in this drug a potent and almost immediate germicide. It is devoid of septic properties, its worst effect being, when used in a too concentrated form, to cause some local pain and irritation. It is applicable to all cases where there is pus, and when the discharge is foul

and profuse is unequaled in the effect it produces. In suppurating otitis media, in purulent conjunctivitis, the aurists and ophthalmologists have long prized it as one of their most valuable medicaments. In the sloughing inflammations following scarlet fever and diphtheria the laryngologists place great confidence in its powers. The surgeon, however, in whose work it would prove generally valuable, has been most chary in recognizing its virtues. There are reasons for this. The preparation is unstable; in past time it has frequently been impure, and unscrupulous or ignorant pharmacists may palm off on the profession preparations which have lost their power and become absolutely inert. At the present time peroxide of hydrogen can be obtained pure and of full strength (3.2 per cent. solution).

Its use in a great variety of sloughing and suppurating cases has given results better than those obtained from any other germicide, bichloride of mercury not excepted. Where the discharging area is represented by a surface of granulations, the drug can be applied by means of an atomizer; this enables a small quantity to reach every portion of the infected surface. In the case of a suppurating fistula or cavity the peroxide may be injected by means of a syringe. Immediately following its application to a purulent surface an active effervescence goes on, and every particle of pus which it reaches is destroyed. Not only this, but the microbes, the active agents of pus formation, are also devitalized, so that a large surface can sometimes be rendered aseptic by one or two thorough applications. Even if this result is not reached, the discharge is greatly lessened, and it is by no means uncommon to see a case the pus from which could be counted by drachms, so favorably affected that the dressings contain but a few drops of purulent matter.

The strength in which the fifteen volume solution is used will vary with individual cases. It can be employed without harm in full strength. Where this is painful, one, two or four parts of water may be added.

WOMEN PHARMACISTS.

In a recent number of the *Drug, Oil and Paint Reporter* is an editorial upon "Women as Pharmacists," which is interesting not only on account of the subject immediately under discussion, but for the side-lights which it throws upon the practice of pharmacy in the city of Philadelphia and its neighborhood. Whatever may be said in regard to women having a natural special sphere of work and influence, it is a palpable fact that there are large numbers of women who are shut out by circumstances from this sphere, and who must compete with men as bread-winners. But is this stream of errant sisters most wisely directed? It has always seemed to us strange that while such professions as medicine and law are pressed upon by female candidates for popular favor, dentistry and pharmacy, for which we would think women especially fitted, have been almost avoided. By the readiness with which she takes to

sedentary occupations; by the delicacy of hand through which she is fitted for fine manipulations; by her personal courtesy and attractiveness a woman appears to be especially prepared for handling the implements of the dentist's chair and of the prescription counter. Human nature is, however, a very strange article, and scores of times we have been told by women who employed female physicians, that "they would not dare to trust a female druggist," because, as they said, "women were not accurate." As if accuracy was not wanted in medicine as well as in pharmacy! The lack of accuracy of women is indeed notorious; the teacupful rather than the graduated measure is her unit of work; but we opine that this is not so much an inherent quality of the sex as the result of improper education, and that a woman can be, and ought to be, as careful and accurate as a man.

In the article of the *Reporter* above alluded to, the results of interviews with several druggists are given. One popular pharmacist of Camden thinks that women pharmacists would not find favor because "men would not submit their various ailments to them," a sentiment which is confirmed by a second druggist of the same city, as well as by one of our central Philadelphia pharmacists, who thinks "that women are unfitted for the calling in that they are not sufficiently callous to receive professional secrets with indifference." Is then the knowledge of the life-history of a man necessary for the putting up of a chemical formula? Is there not a colored figure underneath all this? If the druggist is to become the prescriber, then he must know something of the man or woman before him. But has it come to this, that even in our large city drug stores woman is unfitted to act as pharmacist because she is unfitted to prescribe over the counter? Moreover, if this is necessary, is it forgotten that women for years, have done, and every hour of the day do, a large active prescribing? It seems that the Philadelphia College of Pharmacy has graduated eight women. Of these, all except one, who holds a hospital position, are successfully managing drug stores of their own. Life and prosperity then say we to women pharmacists.

THE DIAGNOSIS OF PAGET'S DISEASE OF THE NIPPLE.

SURGEONS and dermatologists have not infrequently hesitated over a case of chronic inflammation of the nipple resembling in its external appearance an eczema, doubting whether the radical operation of excision of the breast should be undertaken; or, in other words, doubting whether they stood in the presence of what was really chronic eczema, or that affection which long ago Paget taught was likely to be followed by a carcinomatous involvement of the gland. Failure in the ordinary applications for eczema, the absence of itching, suspicious induration and long-standing duration have been the clinical data upon which a diagnosis was usually founded.

Darier, in April, 1889, made a communication to the Biological Society of

Paris concerning a new form of *psorospermiæ* found in "Paget's Disease of the Nipple," describing the parasitic *sporozoa* as occurring inside the epithelial cells of the affected parts. These observations have been confirmed and the whole subject greatly elaborated by Louis Wickham, in his admirable monograph, "Maladie de la Peau dite Maladie de Paget." According to these authors, the parasitic bodies are found usually in the lower layers of the epidermis of the diseased tissue, and also in the milk-bearing ducts, and measure from one-third to one-half of the stratum mucosum. So impressed is Wickham with these discoveries, that in the conclusion of his essay he states that Paget's disease is due to the parasites of the class *sporozoa*, and the order *coccidia* or *psorospermiæ*, and should be relegated to the group *psorospermosis*. He believes, moreover, that the presence of these bodies, readily detected by microscopic examination of the crusts from the diseased nipple, constitutes an excellent and rapid method of diagnosis.

Further confirmation of these observations comes from Dr. A. B. Macallum (*The Canadian Practitioner*, October 16th, 1890), who has examined two cases of Paget's disease, and found the bodies in question. In order to avoid disputed points in pathology, Macallum suggests the word *endocyte* as a neutral and readily applicable term to describe these bodies, until their true nature shall be exactly determined. Darier advises that the crust shall be teased out on a slide in Gram's iodine solution and examined with a moderately high-power objective. If fat is present, this may be removed by placing the specimen for several hours in a 10 per cent. solution of ammonia. Macallum modifies this method and secures a permanent preparation by attending to the following directions: The crust, or a portion scraped from the nipple, is teased out in a drop of tincture of iodine on the slide, the cover glass put on, and after a couple of minutes a drop of 50 per cent. glycerine run in. The alcohol and the iodine fix the endocytes, and the iodine gives them a brown-yellow tint, which fades slowly in glycerine. This investigator was thus able to demonstrate these bodies in the free cells, the unteased portions, and in the epithelial cells covering the retracted nipple and filling the ducts. Endocytes present in epitheliomata are distinguishable from these by the absence of cystic membrane, their smaller size and their situation in the central cell of the "nest." Macallum, while unwilling fully to endorse the views of Darier and Wickham, is convinced that the sporozoa furnish a valuable aid in the diagnosis of Paget's disease.

This seems to us a most important field for future work, and not only the diagnostic value of the endocytes, but also their essential nature, are worthy of the careful study which they are at present attracting as etiological factors in various chronic cutaneous disease, and in epitheliomata.

ARISTOL IN BLEPHARITIS.

BLEPHARITIS, by which is meant any of the various grades of inflammation which involve the border of the eyelid in a subacute or chronic inflammation, and which varies in degree from a mere hyperæmia to aggravated types associated with hyper-secretion of the sebaceous glands, and, later, the formation of pustules and crater-like abscesses, is often one of the most stubborn of minor ophthalmic complaints. Since Roosa's investigations we well know that, in a majority of cases, refraction error is present, and while few are willing to admit that ametropia originates the disorder, there is little doubt that its presence aggravates and fosters the condition. In many instances, however, even after the most perfect correction, the regulation of general health, and the use of a host of collyria and salves—the edges of the eyelids remain red, swollen and unsightly. For this reason, perhaps, Gradle, of Chicago, gave his experience in the treatment of this disorder in the *Medical News*, February 8th, 1890, and having, for clinical purposes, divided the disease into an ulcerative and non-ulcerative variety, strongly advocated the claims of an ointment composed of milk of sulphur and resorcin in squamous blepharitis, the region having been prepared for the reception of the salve by removal of the crusts with a 5 per cent. solution of chloral. From personal experience we can testify that Dr. Gradle's method is an excellent one, and will often be followed by surprisingly good results.

Quite recently a new candidate for favor has come into prominence, and it has naturally occurred to clinicians to try the efficacy of aristol, especially in the ulcerated forms of blepharitis. In the *Revue Générale et de Clinique et de Thérapeutique*, September 18th, 1890 (abstracted in the *Medical News*, October 25th, 1890), an ointment containing aristol is recommended in this disorder, in the following proportions:

Aristol,		15 grains,
Vaseline,		
Lanolin,	āā	75 grains.

This salve is advised in place of the ordinary yellow oxide of mercury so commonly employed in this affection.

Inasmuch as a number of the varieties of marginal blepharitis are properly classed among the eczemas, it is interesting to note that in the investigation of Thomas N. McLaughlin (*Virginia Medical Monthly*, November, 1890) on the use of aristol as a substitute for iodoform in the treatment of diseases of the skin, this drug, in the proportion of one drachm to seven drachms of lanolin, was found most efficacious in several cases of papulo-pustulous and squamous eczema. In the opinion of this physician, aristol possesses stimulating, alterative and anæsthetic properties, and is very advantageous on account of the absence of any discoloration of the skin from its use, and its lack of irritating properties.

We have tried aristol, in the form of the ointment originally quoted, in a number of instances of blepharitis, and in several cases of eczema of the lid associated with phlyctenular ophthalmia, eversion of the punctum lachrymale and constant epiphora, and have not been disappointed in its effects. If we are not mistaken, the routine dispensary practice too often fails to recognize the fact that blepharitis appears under a variety of types, and should be subjected to the rigorous classification so dear to the hearts of dermatologists, and the various ointments and local remedies changed according to the classification. It will be found that aristol salve, in the proportions named, will not be the least useful among those measures employed to combat the ulcerative forms.

THE OPERATIVE TREATMENT OF THROMBOSIS OF THE CEREBRAL SINUSES.

It is but recently that it has been recognized with what ease hemorrhage from the cerebral sinuses can be controlled if the opening in these huge venous channels is accessible to direct manipulation. The furious bleeding which has many times caused almost immediate death upon the operating table can be at once checked by very moderate pressure, and this fact is well attested not only by the individual experience of most surgeons, but by numerous reported cases. With this knowledge and with the added light thrown in recent times upon the necessity of thoroughly evacuating all foci of septic absorption in cases of septicæmia or pyæmia, would naturally follow the attempts of the surgeon to push his investigations further than the mere evacuation of pus collections in cases of cerebral abscess, and to explore the contents of the neighboring sinuses with a view to laying the latter open and evacuating their contents when they are found to contain septic thrombi, thus placed in most favorable position for general distribution throughout the system. That these thrombi commonly form in cases of brain abscess, particularly in such as are caused by middle ear disease, is proven by the results of many post-mortem examinations; indeed, when, as is frequently the case, septic emboli manifest their presence in many different parts of the body, these are nearly always carried directly, not from the general abscess cavity, but from the purulent matter existing within the sinuses.

The case reported by Lane (*British Medical Jour.*, May 4th, 1889) called general attention to the possibility of surgical intervention in these cases of involvement of the sinus. The patient suffered for many years from periodical discharge from the right ear. A polyp was removed in November, 1887. Nine months later the patient complained of pain. On the following day there was a reappearance of the periodic flow; the patient became feverish and vomited. A week later another polyp was removed. Immediately following this operation the child became semi-comatose, both discs were swollen, and an offensive

secretion was discharged from an opening in the tympanic membrane. On the following day there was a convulsion. The mastoid cells were opened, but no pus was evacuated. The convulsions were repeated. Further operation evacuated an abscess which was in immediate relation to the lateral sinus. The outer wall of the latter was in a sloughing condition. The sinus was thoroughly cleansed of septic contents until healthy clots were reached. The internal jugular vein was tied immediately below the thrombus, in order to prevent the blood returning from the sinus from carrying septic matter into the general circulation. A drainage tube was placed in the sinus, which was thoroughly irrigated. Six weeks later the child was perfectly well.

Salzer (*Wien. klin. Wochenschr.*, 3 jahr, No. 34) contributes two additional cases. The first suffered for many years from purulent discharge from the left ear. Following a slight irritation of the auditory canal, the patient complained of pain in the back of his head; this became exceedingly severe and was accompanied by fever. The diagnosis of thrombus of the transverse sinus was made probable by the symptoms which subsequently developed, namely, apathy, somnolence, vomiting, loss of appetite, slight contractures of the lower extremities, and the discovery of bronchitis, enlargement of the spleen, and œdema over the left mastoid sinus. On incision through the soft parts some pus was discharged from a small opening in the posterior border of the temporal bone. This opening was enlarged by means of a chisel, a quantity of pus was evacuated, and the sigmoid sinus was fully exposed. It did not pulsate. It was first punctured, then freely opened. Part of its wall was excised, and a dark-brown thrombus was evacuated. The sinus and the whole wound were then tamponed with iodoform gauze. For a while the patient was somewhat better, but died one week after the operation from septicæmia and lobular pneumonia. On post-mortem examination a thrombus was found occluding not only the left transverse sinus, but even extending to that of the right side.

The second case had also suffered from otitis media. Rather suddenly the symptoms of brain involvement appeared, accompanied by œdema behind the left ear. An opening was made in the base of the mastoid process, and an extra dural abscess placed over the left temporal lobe was evacuated. The sigmoid sinus showed neither respiratory nor pulsatory motion, and was found to contain a thin, offensive pus. This collection was evacuated, the blood channel was thoroughly cleansed, and was tamponed with iodoform gauze. The cerebral symptoms rapidly disappeared, and the patient completely recovered. The characteristic symptoms of this case were apathy, somnolence, delirium, epileptiform convulsions and hyperæsthesia of the right side of the body, trismus, disorders of speech, rigors, fever, and, finally, the appearance of swelling and tenderness over the left mastoid process. It is worthy of note that the special symptoms of mastoid involvement, namely, local pain and tenderness in the course of the internal jugular vein, extensive disturbance of circulation in the region of the ear, and the rigors, metastases and other characteristics of pyæmia were absent in the second case.

These cases are of exceeding great importance, and undoubtedly show the

cause of failure in many operations adopted for the relief of cerebral abscess secondary to middle ear disease. It would seem to be the surgeon's duty in such cases, especially where the pus collection is immediately in contact with the sinus, to puncture the latter with the needle of a hypodermic syringe. By this means it can be determined whether or not circulation is still maintained, and whether a thrombus is formed which has undergone purulent degeneration. In the latter case the universal principle of surgery should be applied. If, in clearing out the infected blood clots the venous channels were again to become patulous, the flow of blood could be readily checked by gauze tampons.

THE SURGICAL IMPORTANCE OF CERTAIN SYPHILOMATA.

THOUGH it is certainly true that the syphiloma as ordinarily seen in its seats of predilection, accompanied by distinct signs of the disease in other parts of the body, and verified by a clear history of hereditary or acquired disease, is one of the easiest of surgical affections to diagnose correctly, it must be remembered that this development of syphilis is capable of assuming protean forms and of closely simulating malignant tumors, that it is found at times when not the slightest history of the taint can be elicited, that it develops not unfrequently very early in the course of the disease, and that it attacks parts and tissues which we have learned to consider comparatively free from its ravages. Here comes in the question of differential diagnosis, a question of major importance to the patient. A mistake may, on the one side, lead to useless mutilation, on the other to a delay beyond the point when the knife can be of service. There are few of large experience who have not witnessed the unfortunate results of such mistakes.

Karewski (*Centrablatt für Chirurgie*, No. 34, 1890), states that it is particularly with the syphilomata found invading the muscles, the mucous membranes, the testicles and the mammæ, that difficulty in diagnosis occurs. It is certainly true that the majority of tumors occurring in muscles are syphilitic in origin, and that no skeletal muscle is exempt from these growths. Nevertheless, there are seats of predilection, since more than a third of the recorded cases have been observed in the sterno-cleido-mastoid. The syphilitic involvement of this muscle may take the form of a diffused myositis, or of a circumscribed gumma; in the latter case the tumor is mostly found in the belly of the muscle. Trauma distinctly predisposes to its development. In the case of muscle gumma, the important point is, of course, to eliminate the possibility of this growth being sarcomatous in nature, since here life depends upon a prompt recourse to thorough ablation. Where there is absence of all specific history, the chances are still largely in favor of the growth being syphilitic, since sarcoma beginning in the muscles is a much rarer affection. As further corroboration of the specific

nature of the tumor would be a comparatively slow growth limited to the muscle first involved, and pain particularly marked at night. Excision of a small part of the growth and macroscopical and microscopical examinations would also be important means by which the true nature of the disease could be detected, though it must be remembered that the picture presented by microscopic sections of gumma and sarcoma may be strikingly alike. Indeed, macroscopical examination would probably give more conclusive results, since the finding of foci of cheesy degeneration, necrotic areas, and scar tissues, in close relation to each other, is the characteristic picture of syphilis. If, after all these means are exhausted, the diagnosis still remains in doubt, a brief, but vigorous trial of antisyphilitic treatment should be made before proceeding to operation.

Fibroma is very rarely found except in the abdominal muscles. Here, again, the therapeutic test should be applied before ablation. As to the rheumatic nodules, Karewski considers it an open question as to whether they are not all syphilitic in nature.

In every text book will be found an elaborate discussion of the peculiarities of syphilis as manifested on the tongue and in the testicles. Yet mistakes are made by the most experienced, since a diagnosis is at times impossible. In all these cases, where the local conditions are obscure, a thorough trial of mercury and iodide of potassium should be made.

The least recognized manifestation of syphilis is that which is found in the breast. There is, in the first place, a specific mastitis characterized by the same local changes as mark simple mastitis, except that there is little or no pain, no surface evidences of inflammation, and no tendency to suppuration. Then, there is the gumma having precisely the same characteristics as mark it when found in other parts of the body. It is important to realize that the disease may appear in these two forms in the breast, since if this is known the operator will not rush into surgical interference without carefully considering the possibility of a cure being accomplished by other means.

BOOK NOTICES.

Diseases of the Eye. By Edward Nettleship, F. R. C. S. Fourth American from the fifth English edition, with a Chapter on Examination for Color-Perception, by William Thompson, M. D. Philadelphia: Lea Brothers & Co., 1890.

Students frequently ask the question, "What book on diseases of the eye shall I purchase which is not too technical?" Mr. Nettleship's work has always been one of those which we have recommended, and we feel sure that no student who has perused its pages carefully and conscientiously has ever been disappointed. He has neither been overwhelmed in the deep seas of technical ophthalmology, nor been left standing on the shore doubtful and uncertain because of vague descriptions or inadequate accounts of the most important facts in the science of eye surgery.

Five editions of this book have appeared in England, and now we welcome the fourth American revision. The book has not been much increased in size, and the additions, often made by the changing of a very few words, require a careful perusal of the volume for their detection. Quite a number of alterations are found in the chapter on "Operations." For instance, there is a good brief description of Van Millingen's operation for trichiasis, together with an illustrative cut. Speaking of the various operations for cataract Mr. Nettleship says: "For the last twelve months I have operated, as a rule, without iridectomy. That many cataracts can be easily and safely extracted without iridectomy admits of no doubt; and it appears equally certain that some cases, especially where the lens is very hard, cannot be dealt with properly in this way." This is interesting in connection with what he says in his former edition: "For my own part, speaking from a moderate experience, I fail to see that the reasons for which iridectomy was introduced in the extraction of hard cataract are less cogent than they were; whilst I am sure that the wish for external perfection, however laudable it may be, may here, as in other operations, lead us astray."

The author in this volume adheres to his former opinion that, while retinoscopy is a valuable means of objectively determining the quantity of any error of refraction, its use has been somewhat overrated, and it should be looked upon as an auxiliary rather than as a substitute for other methods.

Dr. Thomson's chapter on the "Examination for Color-Perception" is a valuable addition, in the present arrangement appearing at the end of the volume. This portion of the book is enhanced in value by the insertion of Professor Holmgren's colored plate illustrating the colors commonly confused.

It is unnecessary to point out in detail the changes which have been effected in this new revision, and which have increased the value of a book that has long been one of the most satisfactory brief treatises on diseases of the eye. Mr. Nettleship has certainly succeeded in supplying students with "the information they most need" on ophthalmic surgery; and, indeed, the usefulness of the book is not limited to students in their hospital course, but may with propriety and profit be read and digested by those who have long been in active ophthalmic practice.

TRANSACTIONS OF THE ASSOCIATION OF AMERICAN PHYSICIANS. Fifth Session, held at Washington, D. C., May, 1890. Vol. V. Philadelphia: 1890.

Volume V of the Transactions of the Association of American Physicians, contains a series of papers of great force and interest. Whatever line the clinician's taste may take, he will find something to think about or to learn here. If bacteriology be his choice, Drs. Ernst, Shakespeare and Trudeau are good companions to study with. If he fancies clinical chemistry, Drs. Shattuck and Kinnicutt have something to teach, while Dana, Lusk, Fitz, Pepper, Mitchell, and Danforth write of many things, and scarcely a region of the body but is elaborately considered by some distinguished student.

Where all are so good choice is hard. The University is well represented by a very studious and elaborate paper by the Provost, and Dr. Crozer Griffith on "Varicose Aneurism of the Aorta and Cava;" one on "Disorders of Sleep," by Dr. Weir Mitchell; some observations on "Migraine," by Dr. Sinkler, and an address by Dr. Shakespeare on "What Can be Done to Limit the Prevalence of Tuberculosis in Man?"

Professor Lusk discusses "Antisepsis in Midwifery," describes the precautions in the Emergency Maternity of Bellevue, and the excellent results which follow in spite of the bad class of cases. After washing the pudenda and parts adjacent with soap and water, with plain water and with a 1-1000 solution of corrosive sublimate, the vagina is douched with soap and water, and then with a 1-4000 sublimate solution; the internes while in attendance are not allowed to visit the dead-house nor the erysipelas ward, nor to dress wounds or assist in surgical operations, and both they and the nurses wash with sublimate (1-1000) while attending a patient in labor. The vagina is douched with 1-5000 solution after labor, and a sublimated gauze pad is applied after dusting with iodoform. "The temperatures rarely rise above 100½°, and as a rule do not exceed 100°."

Professor I. T. Dana writes on "Shock and Sudden Coma;" Dr. Weir Mitchell and Dr. C. F. Folsom on the "Disorders of Sleep," the former considering the periods immediately preceding and succeeding sleep, the *præ-* and *post-dormitium*, nocturnal paralysis, sleep-pain, and those very strange phenomena which Dr. Mitchell was the first to describe as "sensory shocks." A number of extraordinary illustrative cases are reported. Hallucinations which occur in persons otherwise sound in the period between waking and sleep are sometimes the first far-advanced heralds of insanity, and hence they may be valuable as prognostic indications. Usually, they are limited to the senses of sight or hearing, but the author reports one case where olfaction was concerned, which in several months ended in melancholia, with delirium of persecution. Nocturnal paralysis, or "sleep numbness" is also described, a very curious state and sufficiently alarming. Dr. Folsom takes for his branch of the same subject insomnia, its varieties, causes and treatment, and the general hygiene of sleep. A paragraph is well worth quoting.

"The hygiene of sleep includes the most minute attention to the whole environment of the patient, position, change of room or locality, temperature of the body and of the air; diet, digestion, secretions, fresh air, soothing sounds or manipulations, rest and exercise accurately adjusted to the needs of the system, presence or absence of noise, relief from sources of irritation. . . . Massage and the wet-pack are of the greatest value."

What wisdom hard won from wrestling with neuropathic patients is shown in this:

"Very many people (highly educated as well as ignorant) firmly believe that if there is not a specific for their malady, the reason is that it has not been brought to light; and they not only demand repeated trials of useless remedies, but assiduously follow enticing promises

in regard to those that are even injurious. When our advice does not meet their fancies in that regard they continue to search for what they crave. The greater one's experience, the more is he satisfied how little he can do as compared with what the community insists upon expecting."

The dozen new hypnotics which the last few years have produced are considered one by one, and Dr. Folsom concludes that paraldehyde, chloralamide and sulphonal are the best of them, and the last is "the most important and widely useful of the new hypnotics." His method of administering it is worth noting—5 grains several times repeated.

Two papers on the "Diagnosis of Diseases of the Stomach," by Drs. Kinnicutt and Shattuck, rank with Dr. Mitchell's and Dr. Folsom's as the best in the volume, and are of value to any one who wishes the latest word on these troublesome subjects.

Dr. Kinnicutt follows Leube's and Ewald's plan of giving a simple "test-meal" of known quantity, withdrawing it by the stomach-tube after a certain time and studying the state of digestion reached. One looks anxiously to see what the author thinks about the disputed question of the diagnostic value of the presence of free HCl. He believes the quantity of HCl found during various stages of digestion of great importance in diagnosis, and classifies this in this way :

I. HCl present at height of digestion, but diminished.
II. HCl not demonstrable.
III. HCl apparently increased.

These three groups represent three pathological conditions :

I. Chronic catarrh and the similar cachectic states of the stomach ;
II. Gastric cancer, severe catarrh and atrophy ; and
III. Simple ulcer and secretory neuroses.

We quote in full the writer's general conclusion respecting this sign :

"The diminution or absence of free HCl in chronic gastritis, atrophy of the mucous membrane, and certain other diseases previously mentioned, detracts from the positive value of this sign in the diagnosis of gastric cancer. It is rather to be considered of corroborative value in the presence of other symptoms and signs of the disease.

"On the other hand, *the presence of free HCl in the stomach-contents, in repeated examinations, in doubtful cases, is of the greatest diagnostic value and points very certainly to the absence of cancer.*"

Dr. Kinnicutt gives the tests and manipulations necessary to the study and determination of the various diseases of the stomach at length, and all of them are within the possibilities of time and laboratory of most practitioners. We doubt, though, if many patients would submit to having the motor sufficiency of the stomach tested by the giving through a tube of 100 grammes of olive oil, the portion remaining after an hour being withdrawn again for measurement !

For a commentary and corrective, lest one should incline to rely too much upon the results of these chemical studies, Dr. F. C. Shattuck's paper may be read. It is his "belief that our main reliance in gastric diagnosis must still be placed upon the rational and the coarser old-fashioned signs."

The general discussion of these papers by the members of the association is interesting, but for comment on this, on Dr. Graham's report of two cases of acromegaly, or the other most valuable contents of the volume we have no space.

The level of the literary execution of the papers in the Transactions is remarkably high, and one misses, with unalloyed pleasure, the dozen of hard-worked quotations, the involved and labored sentences, and the occasional bursts of florid rhetoric with which one is all too familiar in the medical writings of the day.

A Treatise on Headache and Neuralgia, Including Spinal Irritation, and a Disquisition on Normal and Morbid Sleep. By J. Leonard Corning, M.A., M.D. With an Appendix on Eye-Strain, A Cause of Headache. By David Webster, M.D. Second Edition. New York: E. B. Treat, 1890.

Dr. Corning has had the satisfaction of seeing his book, in a comparatively short space of time, reach a second edition. This is always a sufficient guarantee that the work has been well done, and that the subject-matter has been handled in such a manner as to command the attention of medical men and supply a needed addition to their sources of information. We have had the pleasure of reviewing the first edition of this book in some detail; and as the present volume contains exactly the same number of pages, it is evident that the work of revision has not required the addition of much new matter. It is unnecessary to do more than congratulate the author that his work has received so kind a reception at the hands of his professional brethren.

The present volume contains as an appendix a chapter on "Eye-Strain as a Cause of Headache," written by Dr. David Webster. In Section X headaches which are dependent upon errors of refraction, impaired accommodation, and insufficiency of the extrinsic ocular muscles, receive attention. The well-known fact that ametropia and strain upon the ciliary muscle produce head-pain as their most constant symptom, is briefly described. The treatment of these cases necessarily resolves itself into the prescription of the proper correcting lenses. While it is not distinctly stated, an examination of the reported cases makes it evident that Dr. Webster, in the majority of cases, prescribes that glass which the patient "accepts" after the effect of the mydriatic used to relax his accommodation has passed away. It seems also that in some instances only the manifest astigmatism was corrected, and not that which was revealed to be total by the mydriatic, although, as is almost universally the case, when sometime afterward a spontaneous relaxation of the ciliary muscle brought forth latent hypermetropic astigmatism, a stronger correction was ordered. While we do not for a moment doubt that in many instances the correction of the total hypermetropia is an unwise procedure, and, indeed, a practically impossible one if at the same time there is insufficiency of the external muscles, we have never been able to convince ourselves that correction of the entire astigmatism found under a mydriatic was an unscientific practice. Headaches dependent upon the insufficiency of the external muscles are believed to require as a therapeutic means either the use of prismatic spectacles or a graduated tenotomy—the former if they can be worn by the patient without inconvenience; the latter if the degree of heterophoria is too great to permit of their use, or if after their use the symptoms are not relieved.

The appendix covers nearly twenty-two printed pages, and more than fourteen of these are composed of detailed descriptions of cases, all of which illustrate the fact that the treatment was efficacious. We confess that this addition to the book is a considerable disappointment. Dr. Webster's well-known abilities as a practical ophthalmic surgeon, and, moreover, as an advocate of the modern treatment of muscles, led us to believe that he would have seized this opportunity to present a more philosophical discussion of the mechanism of headache in eye-strain, and the indications for the various types of treatment. This chapter reads too much like a series of pages from the case book in the office of an active ophthalmologist to be satisfactory to one who searches for the cause and the reason of the disorder, and its treatment.

THE 'MEDICAL NEWS" VISITING LIST, 1891. Philadelphia: Lea Brothers & Co.

This excellent book, which in the completeness of its arrangement leaves little to be desired, is prepared for thirty patients per week, and contains, in addition to the pages intended for the daily record of practice, others for clinical memoranda, consultations, obstetric engagements, vaccinations, deaths, addresses and cash accounts. The first thirty-two pages include convenient facts in regard to weights and measures, comparative thermometric scales, incompatibles, antidotes, table of doses, and lines for the ligation of arteries.

The brief description of the methods of urine examination is singularly insufficient. Some account of tests for the detection of albumin other than heat and nitric acid deserves place, especially the various forms of "pellets" of potassium ferrocyanide and similar modern methods so useful in bedside examinations; and even the description of Heller's test which is given is by no means adequate. A very curious section appears under the caption "Some Remedies not yet in General Use." The reader naturally turns to this, and, it is true, finds some of the more modern drugs, but is not a little delighted to meet a number of friends whose active physiological properties have been the common property of the profession for long years. For instance, as homatropine was discovered in 1879, and has been since that date very constantly employed, having been the subject of numerous clinical and physiological papers, we think it of doubtful expediency to class it among remedies "not yet in general use." The statement that twenty-four grains of this drug to the fluid ounce of water is required to paralyze the muscle of accommodation is entirely incorrect. Six grains to the ounce is quite sufficient, and the most enthusiastic advocate of this mydriatic would be disinclined to employ it in a strength exceeding two grains to the drachm. We do not believe that the progressive tendency of modern medicine and its aptitude for trying various remedies are correctly rated by including in this list hyoscine, icthyol, naphthalene, nitro-glycerine, salol, or even paraldehyde, phenacetin, sulphonal, urethan, and, "most unkindest cut of all"—santonin. The thousands of intestinal entozoa which have fallen before the latter's anthelmintic power since first this drug was introduced into medical practice in 1830, furnish ample testimony that it has been a remedy in most active general use for more than half a century. The dose is stated to be from two to ten grains, depending upon the age of the patient. It surely would be a very tough lumbricoid and a very resisting, ancient patient, to require the latter dose. We would scrutinize with distrust the doctor who had prescribed in one dose ten grains of santonin; the patient who took the dose would view, if sight still remained, the doctor and the world in general with a very yellow vision.

We have pointed out these slight blemishes in the first part of the "'Medical News' Visiting-List," because we feel sure that this portion deserves a careful revision, and is not in perfect accord with the rest of the book, which, as we have already stated, in the completeness of its arrangement is one of the best, if not the best, record book on the market.

PRACTICAL ELECTRICITY IN MEDICINE AND SURGERY. By G. A. LIEBIG, JR., PH.D., and GEORGE H. ROHÉ, M.D. Philadelphia: F. A. DAVIS, 1890.

So numerous are books on the subject of electro-therapeutics becoming, and so constantly do they demand the attention of the reviewer, that some delay in according them this may occasionally be pardoned. The authors of this most excellent treatise must be congratulated on having accomplished a result well ahead of reasonable expectation. Their individual reputations might

be claimed to assure this, but when one recalls the great names which have appeared upon the title pages of huge rambling volumes setting forth some little of science, much conjecture and such vast masses of chaotic observations, one concludes to petition for something besides the name to expedite acceptance. The subject of electro-therapeutics is receiving pretty thorough ventilation just now, if dogmatic assertions and rather heated denials serve this end. Some high authorities are roundly calling a halt on those who serenely encourage their hopefulness to exhibit astounding results in electrolysis especially. To all these the calm judicial statements of this volume are cheerfully commended. In forming a competent judgment on the large subject of the utility of electricity in both medicine and surgery, the ground is very wide indeed, and no one can sanely deny to its agency immense value.

To quote the beginning of Part III:

"Electricity is employed in medicine and surgery for a variety of purposes and in different ways. At one time its use is to stimulate nutrition; at another to excite muscular contraction by its irritant or exciting effects, acting either directly on the muscular fibre or indirectly through the nerve supply of the muscle. Again, the current is used to modify the blood supply of a part; here to relieve pain, there to exalt sensation; now to destroy tissue by the slow process of electrolysis, then to remove a part by the rapidly acting [and antiseptic] galvano-cautery; and finally to furnish light and a medium of sound transmission for diagnostic purposes."

Of the chapters in detail, all that need be said is that all subjects touched upon are clearly and succinctly set forth. The statements on electro-physiology are to be praised for temperance and brevity. The methods and results of application in diseased processes are conscientiously limited to what may be safely asserted as established, or at least generally accepted. Thus the book ends. The authors "trust that their every assertion will bear investigation and criticism. Less attempt has been made to include everything written upon the subject than that nothing untrue shall be contained within the covers of the book." Indeed, more might be said on certain subjects than has been deemed wise by the authors to say. Some reference to the great aid the Faradic current affords in demonstrating cortical areas in operation upon the human brain should have been made.

Hypodermic Medication. By Bourneville and Bricon. Edited by G. Archie Stockwell, M. D. Detroit: George S. Davis, 1890.

In this most interesting little book the author has given us what must prove a valuable aid to the practitioner. The selection and use of materials for hypodermic application is a subject upon which little is taught in the schools; and a wider and deeper knowledge of this branch of practical therapeutics will certainly be of great advantage to a very large number of physicians.

The brochure has been extensively altered from the original work of Bourneville and Bricon, and a great deal of interesting and valuable original matter inserted by the editor. In the introduction he treats of the history of the art, the implements to be employed, different forms of injection, and in a general way their relative advantages and disadvantages. Then each of the more important drugs are separately considered—their solubility, their physiological action, briefly, and their dose, and the diseases in which they have been found especially serviceable, with quoted authorities. The description of each drug is accompanied by a formula suitable for its hypodermic application. The work is well written, concise and comprehensive, and will, no doubt, be given by the profession the warm welcome it deserves.

LECTURES TO NURSES ON ANTISEPTIC SURGERY. By E. STANMORE BISHOP, F.R.C.S. New York: Bromfield & Co., 1890.

The author has succeeded in condensing within the sixty-five pages of this book the fundamental principles of antiseptic surgery in a manner deserving of great praise. The literary liquid-diet fed to nurses on account of the supposed embryonal condition of their cerebral development is one little calculated to fit them for the grave responsibilities of their chosen profession. The writer of this book shows that scientific accuracy is not incompatible with a lucid, attractive style of writing entirely free from technical verbiage. We know of no elementary work in which the broad principles of bacteriology and antiseptic surgery are more carefully and clearly explained. We would like to see more stress laid upon the proper method of cleaning the hands, and would take exception to some of his statements, to wit: that the main objection to carbolized gauze as a dressing lies in its irritating qualities.

The opening sentence in regard to the reciprocal duties of nurse and surgeon are so apt that we cannot forbear from quoting a portion:

"It must surely be imperative not merely that each should have a clear idea of the particular duty he or she has to perform, but that pervading and directing the whole there should be one purpose, one clear understanding of what is aimed at, and a main plan of the methods by which the result is to be gained."

Heads of training schools would do well to use this as a minor text book in grounding their pupils in the first principles of their calling.

MISCELLANEOUS.

DEATH OF DR. LEVIS.

DR. RICHARD J. LEVIS died suddenly, of pneumonia, at his country residence, Cedarcroft, near Kennett Square, on Wednesday morning, November 12th, 1890.

Dr. Levis was born in the city of Philadelphia in 1827, receiving his early education at the High School, and was graduated in medicine from Jefferson College in 1848. He was appointed surgeon to the Philadelphia Hospital in 1859, and during the Civil War served in two of the military hospitals in this city. After the war Dr. Levis was appointed surgeon to the Wills Hospital, and in 1867 lectured on ophthalmic and aural surgery in the Jefferson Medical College. In 1871 he was elected surgeon to the Pennsylvania Hospital, and continued to fill that position until 1885, when he became surgeon to the Philadelphia Polyclinic and College for Graduates and president of its Board of Trustees. He was also surgeon to the Jefferson College Hospital. In addition to these numerous public services, upon which Dr. Levis bestowed his best efforts, he was president of the Philadelphia County Medical Society from 1885 to 1886, and president of the Medical Society of the State of Pennsylvania for the year 1887-88. He retired from active medical practice in 1887.

Dr. Levis occupied a high rank in the medical profession, and his distinguished services as a clear clinician, an able surgeon, and a brilliant operator will not be forgotten.

ATHLETICS IN THE MEDICAL DEPARTMENT.

EIGHT years ago the Medical School was as a thing apart from the general current of college life, and any active participation in the sports or regattas on the part of medical men was, except in a few individual instances, practically unknown. At that time a few students of the Medical Department, encouraged by the hearty welcome accorded them by the College men, formed the first medical crew, and came in last at the class races. Last year the medical crew won these races, and this year two of their eights took second and third places. Not only on the river, but in all the sports and competitions they are prominent. This is fostering a college spirit in which the medical men have heretofore been singularly deficient. To-day the red and blue is worn by them, the college cheer is in their throats, they no longer look askance at the men of other departments, but greet them as children of the same fostering parent. They are at last pulling together for their own good, and the good of their Alma Mater.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

THE College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $180, will be made on July 14th, 1891. Essays intended for competition may be upon any subject in medicine, and must be received by the Secretary of the College on or before May 1st, 1891.

PERSONAL NOTE.

On October 8th, 1890, Drs. S. D. Risley, Charles A. Oliver, Edward Jackson and Frank Fisher were elected attending surgeons to Wills Hospital.

The increased duties which this position entails upon Dr. Risley have caused him to resign his position as chief of the Clinic for Diseases of the Eye in the University Hospital and Instructor in Ophthalmology in the University of Pennsylvania. In these capacities he will be succeeded by Dr. James Wallace. Dr. Risley, however, will not entirely sever his connection with the University, but will continue as Lecturer on Ophthalmology.

CORRESPONDENCE.

An Ancient Theory of Malaria.

4504 Pine St., Philadelphia, *November* 3d, 1890.

To the Editors of the University Medical Magazine:

Dear Sirs: The following extract from Varro may, perhaps, be of sufficient interest to the medical fraternity to warrant its insertion in the Medical Magazine.

Varro, I may premise, was a polyhistor, a sort of walking encyclopedia, born in Reate in 116 B. C. and died B. C. 27. Amongst his very numerous works on a great variety of subjects was one entitled "*Rerum Rusticarum libri tres*," from the first book of which (the more particular reference is I, xii. 2) the extract is taken.

"*Animadvertendum etiam, si qua erunt loca palustria—quod crescunt animalia quædam minuta, quæ non possunt oculi consequi et per aëra intus in corpus per os ac nares perveniunt atque efficiunt difficilis morbos.* 'It is to be noticed also, if there be any marshy places—that certain minute animals breed [there], which are invisible to the eye and yet getting into the system through mouth and nostrils, cause serious disorders (diseases that are difficult to treat).'"

Scientifically, of course, this amounts to little or nothing; but, for all that, it is exceedingly interesting to find such a statement of a modern theory set forth by a learned man of the days of Cicero and Cæsar.

Very truly yours, W. A. Lamberton.

Seventh International Congress of Hygiene.

To the Editors of the University Medical Magazine:

Washington, D. C., *October* 27th, 1890.

Dear Sirs: I am requested by the Honorable Secretaries of the Committee of Organization of the Seventh International Congress of Hygiene and Demography to call attention to the fact that this Congress will be held in London, during the week beginning August 10th, 1891.

The Governments of all countries and municipalities and all Public Health Authorities, Universities, Colleges and Societies occupied in the study of the sciences more or less immediately connected with Hygiene, are invited to coöperate and appoint delegates to represent them at the Congress. The Prince of Wales will preside.

A Committee of Organization has been formed, of which Sir Douglas Galton is Chairman and Prof. W. H. Corfield and Mr. Shirley F. Murphy are Honorary Secretaries. An exhibition of articles of hygienic interest will be held in connection with the Congress. The last of these Congresses was held in Vienna, in 1887, and was attended by over 2000 persons, and it is expected that the London meeting will be one of great magnitude and importance.

Very respectfully, John S. Billings, M.D.,
Member of the International Permanent Committee.

UNIVERSITY MEDICAL MAGAZINE.

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ORIGINAL ARTICLES.

LESSONS TAUGHT BY THREE FATAL ABDOMINAL OPERATIONS.[1]

By John B. Roberts, M.D.

The courteous invitation of your Chairman, to present a short topic for discussion, has induced me to offer, this evening, a simple report of three consecutive abdominal operations, in all of which death occurred. As you will readily understand, this recent experience was not an agreeable one to me, the operator.

A consideration of the clinical histories of the cases may, however, be productive of good, in that it will lead to a discussion of the possible errors of judgment involved in their treatment. All the cases were important ones, and caused me a great deal of thought and anxiety before the operations were done; and, it is needless to say, no little discomfort after their fatal issue.

They were:

I. An attempt at nephrectomy, by the abdominal route, for tubercular and calculous nephritis. Death.

In this case the autopsy showed quite clearly that lumbar nephrotomy would have led to a definite diagnosis, and possibly, perhaps probably, would have been followed by cure after a prolonged course of treatment.

II. Cholecystotomy. Absence of gall stones. Cause of jaundice not discovered. Death.

The autopsy here revealed a fetid abscess between the gall bladder and adherent coils of intestine, and indicated that the jaundice was due to pressure on the common bile duct by this abscess and other inflammatory deposits.

[1] Read before the Surgical Section of the New York Academy of Medicine.

III. Large umbilical hernia with spontaneous rupture of the dropsical hernial sac. Operation for radical cure. Death.

The death of this patient was probably due to the fact that I avoided introducing drainage tubes into the peritoneal cavity.

Having given a very short account of the character of these cases, I shall now, in a little more detail, record their clinical histories, in order that a clear understanding may be had of the lines of argument that led me in each case to adopt operative measures which seem to have been the direct cause of their fatality.

CASE I.—*An Attempt at Nephrectomy for Tubercular and Calculous Nephritis by the Abdominal Route; Death.*—The patient was a woman, aged 40, who two years previously had suffered with what was said to be pneumonia, from which time she had never been in good health.

About nine months previous to my seeing her she had been suddenly seized with severe pain in the right side, which extended down into the right leg. This was followed by an illness which confined her to bed for fourteen weeks. During this time the urine was scanty and cloudy, and produced a burning sensation when being voided. Her health progressively failed, and she lost nearly fifty pounds in weight in the two years following the pneumonic trouble. Before she came under my care a tumor was discovered in the right hypochondriac region.

Examination showed the patient to be extremely emaciated, very feeble, and with a hard, globular mass about the size of a fœtal head at term situated in the right hypochondrium. This was readily felt because of the wasted condition of the patient. It evidently extended into the lumbar region, because counter-pressure made on the loin caused the tumor to project much more prominently against the anterior wall. The urine contained large quantities of pus.

The diagnosis was a growth of renal origin, which, in all probability, would be found to be a disorganized and suppurating kidney, perhaps containing calculi.

The question arose as to the method of attack. I was inclined to prefer the lumbar incision, because it would be possible in the event of finding a suppurating kidney to evacuate the pus, and to get rid of the calculous débris that might be present, without interfering with the peritoneal sac. The tumor, however, was evidently large, and was so prominent anteriorly that it seemed possible that it might not be simply a diseased kidney. In the event of its being a large malignant tumor involving the kidney, or a growth of some other abdominal organ, it would be impossible to remove it through the loin. In this view of the case, an abdominal incision would be preferable, because permitting accurate diagnostic exploration and probably complete eradication.

After consultation with a colleague, it was determined to make an abdominal incision with the expectation of removing the tumor radically, whether the disease should prove to be of the kidney or other organ.

An incision was made over the convexity of the tumor, about corresponding to the right semi-lunar line. The omentum, which was adherent to and spread over the mass, was torn through with the fingers. It was then apparent that the presenting part of the growth consisted of a sac filled with whitish fluid. This was recognized as a puriform or purulent collection in the kidney, and was

tapped with a large trocar and canula. The contents were too thick to flow, being cheesy and curdy. A free incision was then made into the abscess, after sponges had been packed around the site of the proposed incision to prevent soiling of the peritoneum.

After evacuation of the fluid, the opening was clamped with hemostati forceps, and enucleation of the remainder of the mass begun. This consisted of numerous cavities or loculi filled with liquid or caseous pus, and was seen to be a disorganized kidney. Notwithstanding the most careful manipulation, some of the sacs, which were thin walled, were ruptured, and allowed escape of some of the fluid into the peritoneum. Numerous clamps were applied over the small openings to prevent this undesirable occurrence, but the thin walls rendered the procedure unsatisfactory. About one-half of the tumor was separated from its surroundings, but it soon became apparent that it would be impossible to completely enucleate it, because it was too firmly adherent to the viscera and posterior abdominal wall.

I finally determined that the only safe course was to abandon the operation of nephrectomy, and to stitch the peritoneum, at the edges of the abdominal incision, to the surface of the disorganized kidney. A portion of the tumor would thus be exposed, so that after its adhesion to the parietal peritoneum it would be possible to split open the diseased kidney and to scrape away the disorganized tissue.

A great deal of time was occupied in getting the sutures properly placed, because the tenseness of those sacs, which could not be safely opened, as well as the deep adhesions of the tumor, rendered approximation difficult.

The shock of such serious and prolonged manipulations, added to the previously bad condition of the patient, caused death within twenty-four hours.

Removal of the kidney even after death was extremely difficult, because of its strong adhesion to the liver, diaphragm, intestines and spinal column. When the specimen was cut open, a multitude of sacs was disclosed, wtih diffluent or cheesy pus for their contents. Within the kidney calculous sand was discovered, and in one place a calculus as big as the tip of the finger, and somewhat pyramidal, was found.

The abandonment of the operation, by reason of the firm and universal adhesions of the tumor, was a source of great regret, but it was evidently the only proper course to pursue after the character of the case was understood.

Attack by lumbar incision would, undoubtedly, have been better, since then the disorganized kidney could have been laid open, and the pus and calculi removed by curetting, without involving the peritoneal cavity. This operation would have been less prolonged, and would have caused much less shock, than that which I, unfortunately, adopted. It is possible, of course, that even this slight amount of shock would not have been borne by a patient in such a depressed condition, but it is certainly evident, from the clinical history, that of the two operations the one chosen was the more dangerous in the conditions subsequently discovered.

CASE II.—*Cholecystotomy; Absence of Gall Stones; Cause of Jaundice not Discovered; Death.*—A woman, aged 42, had for sixteen years suffered with periodical pains in the right hypochondrium, which had been attributed by her physicians to biliary colic. She never had jaundice, but nine months before I saw her her condition increased in severity, so that she had great pain, which extended upward to the shoulder and lasted for three or four days. About this time she noticed a lump or tumor in the right side of the abdomen. The paroxysmal pains continued, and great constipation was present. A few days before coming under my care she was suddenly seized with an exceedingly severe pain, which compelled her to go to bed.

Examination revealed a tender region in the right hypochondrium, or just below it, where a sense of resistance was imparted to the fingers, which gave the impression of a solid mass within the abdomen. The urine contained some albumin and bile pigment; the pulse was irregular, and frequently counted 136; the temperature was 103°. The patient was constipated. Jaundice, which had not been noticed before, was evident, and the stools became clay-colored. The temperature kept high, the jaundice deepened, and irregular chilly sensations were experienced. The abdomen became tympanitic, and the mass previously found seemed to become less apparent to the touch.

At first I looked upon this case as one of biliary calculi, which could be treated by medicinal remedies. I was led to trust this impression because, a few weeks before, a similar case, upon which I had almost determined to operate, was relieved without surgical interference. In the present instance an exploratory operation was frequently discussed, but was postponed until a month had elapsed. Then the patient's condition compelled me to undertake an exploratory incision.

I opened the abdomen over the gall-bladder, which I found greatly distended with liquid bile and bound by adhesions to the intestines. By reason of these adhesions the distended bladder could not be satisfactorily brought to the surface, so as to empty its contents without soiling the peritoneum; but it was tapped with a trocar at its lower part, and the bile evacuated. Between the gall bladder and the transverse colon there was a mass of inflammatory thickening, which to the fingers felt doughy. No attempt was made to tear the bladder loose from the colon or other portions of the intestine. After evacuation of the bile, an incision was made into the bladder, so that my finger could explore the interior, and a probe was passed for a considerable distance into the duct, but no calculus was discovered. My fingers, carried behind the bladder and under the liver, detected no impacted stones in the biliary passages, although quite a thorough examination was made.

The incised wall of the gall-bladder was stitched to the skin, and the orifice kept open. The interior of the peritoneal cavity was flushed with hot water, and drainage tubes were inserted into the bladder as well as into the peritoneal sac.

The cause of the jaundice, and of the distention of the gall-bladder, was not discovered, but I did not attempt any further operative procedure, because I did not know what further steps would be beneficial. The patient was in a fair condition after the operation, but died within twenty-four hours.

A partial autopsy only was permitted. There were some old and very firm adhesions between the gall-bladder and the intestines, and a thickened and

doughy mass between the bladder and transverse colon. This was with considerable difficulty torn, when about two ounces of fetid greenish pus were evacuated. Other adhesions existed in the same region, but no other purulent collection was present. No biliary calculi were found in the ducts.

It seems evident, from a study of this case, that the patient had suffered from attacks of localized peritonitis in the neighborhood of the gall-bladder, and that the severe illness which culminated in her death was due to an attack of this character of greater severity than usual. During my delay in determining whether to operate, suppuration had begun between the colon and the bladder, which gave rise to the irregular rigors and continuous high temperature. The jaundice, which did not enter into the history of the case for many years, and was only present after she came under my observation, was induced, most probably, by pressure on the gall-bladder, either by this abscess or by inflammatory exudate, which subsequently formed adhesions.

The delay in attempting exploration was exceedingly unfortunate. It is also possible that death might have been avoided, even at the time of operation, if I had used the great force necessary to have torn the gall-bladder loose from the adherent colon. Such a procedure would have disclosed the pus pocket, which was the chief cause of the serious symptoms. If no damage had been done by the unusual force employed, separating the adhesions, and thus evacuating the pus, would possibly have relieved the obstruction in the gall-bladder, and certainly would have got rid of a very important element of danger.

CASE III.—*Large Umbilical Hernia, with Spontaneous Rupture of the Dropsical Hernial Sac; Operation for Radical Cure; Death.*—The third fatal abdominal section of the series was in a woman, aged 46 years, who was subjected to radical operation for cure of an enormous umbilical hernia, which, it was stated, had existed for four years. Lifting a heavy stove had originally caused the protrusion of the intestines at the navel. This increased in size, and the patient continued to do her work, apparently without any attempt to control the mass by means of a truss. Finally, the tumor became so large that when she was standing it reached almost to her knees. A short time before coming under operation the tumor was suddenly reduced in bulk by the skin giving way and allowing about a bucketful of pinkish fluid to escape. A few days later she had another discharge of fluid from the tumor, although the quantity was less than on the previous occasion.

I first saw her after the evacuation of these large amounts of fluid, and found an irreducible umbilical hernia of great size, with two or three ulcerated perforations in the skin covering the tumor. A probe could be passed through the opening into the hernial sac, which evidently had been the seat of a large dropsical accumulation. This had been evacuated by spontaneous perforation of the hernial coverings and skin. The hernia, after the fluid had been discharged, formed a tumor measuring about one foot vertically and rather more than a foot transversely.

The patient was nauseated; her appetite was poor, and she complained a good deal of pain and rumbling in the bowels, although she was not constipated. There was some rise in temperature, and occasionally vomiting. From the sinuses leading into the hernial sac a slight discharge of purulent serum continued to escape.

After some preliminary treatment a radical operation for the cure of the condition was undertaken, because of the belief in the impossibility of getting the sinuses to heal, and because this was considered one of the few cases of umbilical hernia suitable for a radical operative procedure.

An incision only large enough to admit my finger into the sac was first made, with the hope that I might be able to accomplish reduction of the mass by tearing up the adhesions and enlarging the umbilical opening. Adhesions, however, were so generally present that this was impossible. A large incision, therefore, was made so as to thoroughly uncover the protruding intestine. During the making of the incision some fetid fluid escaped. The intestines were congested. Thick masses of inflammatory lymph were stripped from the sac wall, and a good deal of congested and inflammatory omentum cut away. In tearing through the adhesions between the various coils of bowel the two outer intestinal coats were torn at one place for about an inch, leaving nothing but mucous membrane remaining. The rent was at once sutured with cat-gut.

The adhesions at the lower border of the hernial ring were finally separated, but at the upper margin of the umbilical opening they were too firm to permit separation of the protruding omentum from the abdominal wall.

The ring was enlarged by incision, and reduction of the intestines accomplished, although a part of the colon and the stumps of the excised portions of omentum were left adherent to the upper border of the ring. These stumps made a good plug by which to close the opening, and were accordingly stitched fast to the remainder of the margin of the orifice after the hernial protrusion had been returned to the abdomen. The abdominal cavity was thoroughly irrigated with sterilized water and wiped out with sponges.

The question of introducing a drainage tube into the peritoneal sac was quite carefully considered. I finally determined to omit it because the parts were more or less accustomed to inflammatory processes, and because I feared that the introduction of a drainage tube might render the closure of the ring less firm. A large portion of the skin and the walls of the sac were cut away and the part exterior to the peritoneum thoroughly washed with a sublimate solution. A drainage tube was left in the space between the skin and the plug in the umbilical opening.

The patient's temperature after being put to bed was 101.2°; her pulse 104. The next day the abdomen became somewhat tympanitic, which condition was treated by saline purgatives and an enema of turpentine. The bowels were thoroughly moved. Her condition became more serious, and I determined to open the abdomen, thoroughly irrigate it and insert drainage tubes. This was done about forty hours after the operation.

The tissues external to the umbilical opening were found united by first intention. It will be recollected that here were raw surfaces, made by excision of redundant tissue and by tearing off masses of lymph from the interior of the large sac. After closure of the ring they had been washed with sublimate solution and had a drainage tube placed between them.

The ring was opened to introduce a glass drainage tube into the abdomen, through which the cavity was thoroughly irrigated with sterilized water at a temperature of 110°. The water as it returned contained flakes of lymph and was slightly tinged with blood. The tube was left in position, and the remaining portion of the wound closed. Death occurred within a few hours.

The autopsy showed a small amount of lymph and serum in the peritoneal cavity, and those intestines which had not been included in the hernia in good condition. The intestinal coils which had formed a part of the mass were intensely inflamed, and in spots almost gangrenous. This was especially true of the transverse colon. There were some adhesions between the liver and the diaphragm. The wall of the intestines, which had been torn during the operation so that the mucous membrane was exposed, had healed satisfactorily. Cat-gut sutures had been used for bringing the edges of this laceration together. There was no sign of hemorrhage in the peritoneal sac, and the stumps formed by excision of the omentum were in good condition.

It was evident that death had occurred from acute septic peritonitis. This was almost without question due to my having introduced into the abdominal cavity coils of intestine in a state of septic inflammation. The septic infection had occurred through the sinuses whence the dropsical fluid had escaped at the time the skin had given way. The establishment of the drainage at the time of operation would have permitted early irrigation of the peritoneal sac when tympany first seemed to indicate the occurrence of peritonitis. The delay occasioned by my indisposition to promptly open the abdomen and thoroughly wash out the peritoneal cavity was, it seems to me now, reprehensible. My experience in successfully returning inflammatory and almost gangrenous gut during operations for strangulated hernia made me feel, I presume, less uneasiness than I otherwise should have felt about the propriety of returning these inflammatory intestines without providing for drainage. The desire to have a tightly closed hernial orifice also led me to adopt this line of treatment. It is evident, however, that taking this risk was injudicious.

I have reported these cases in order that the measures so unwisely used in these instances may be discussed from a personal standpoint by the surgeons present. The experience which leads one of us to adopt definite means of cure would not always be considered trustworthy if he had the advantage of the clinical experience of other surgeons. It is that I may gain this advantage that I have ventured to trespass upon your time to-night with a paper of so little originality, and so full of doleful confessions of erroneous judgment.

TWO CASES PRESENTING SUNSTROKE SEQUELÆ OF UNUSUAL CHARACTER.

By F. X. Dercum, M.D.,
Instructor in Nervous Diseases, University of Pennsylvania.

As is well known, in cases of sunstroke or heatstroke that survive it is not uncommon for the patients to present symptoms indicating that, though life has been spared, some more or less enduring mischief has been done the nervous system. We see this, for instance, in the tendency to frequently recurring or constant headache, in the utter inability to withstand fresh exposure to even slight degrees of heat, and, occasionally, in decided mental impairment. Frequently the symptoms are of such a character as to justify the diagnosis of a chronic meningitis, if not of some more profound disturbance.

In the great majority of cases the sequelæ presented are referable to the cranial contents, or, rather, are confined to changes in the brain or it membranes. It is my object here, however, to detail briefly two interesting cases in which the symptoms were referable in the one instance mainly to the cord, and in the other to the cord and peripheral nerves:

Case I.—M. D., aged 31, white, is a native of Ireland and a laborer by occupation. He presents a good family history, his father, mother, and five sisters being perfectly healthy. No nervous diseases, as far as he knows, had ever occurred among his relatives. He, himself, had never been sick before. He had never lost a day's work. He had been a moderate drinker, but had never drank to excess. He denies any venereal taint. Physically he presents a large frame and looks as though he had, at one time, been possessed of a fine muscular development. He is very intelligent, and gave the following history of his trouble:

In July, 1887, while at work, he had a sunstroke. He fell unconscious to the ground, and appears to have been very ill. He remembers nothing clearly for some five weeks afterward. He was told that during all of this time he had been delirious. While convalescing he had great difficulty in talking; says that at first he could not talk at all. Says, also, that he could not move his hands or feet, and that his legs and arms were numb. Gradually, however, he began to talk better, and little by little regained power over his arms and legs. In the course of four or five months could walk a little with a cane. He suffered, however, at times with dizziness. Headache present at first had now disappeared. His condition, however, was essentially chronic, and in February, 1888, he was admitted to the nervous wards of the Philadelphia Hospital. Here it was noted that he was exceedingly weak in both arms and legs. He could take a few steps with the aid of a cane or if supported, while his grip on both sides was much below normal and tremulous. Sensation had much improved so as to be practically normal in the arms, and but slightly below normal in the legs. Dizziness was still present at times. Speaking seemed to fatigue him, and it was noticed that labials were pronounced very indistinctly, and especially was this marked in the case of dentals. He could not whistle. The cheeks seemed smoothed out and flattened, and there was slight drooping of the lower lip on the left side.

It was further noted that there was slight flattening of the deltoid and supra- and infraspinatus muscles. Marked fibrillary tremor was present in all of these muscles, as well as in the biceps and triceps. Distinct wasting was, however, not present in the muscles of the

arms, forearms, or hands. In the forearms, indeed, fibrillary tremors were not visible; however, if the arms were grasped by the hands of the physician a little below the elbow a coarse thrill was felt. This thrill became more marked when the patient threw the muscles into contraction by firmly closing the hand. It reminded one very much of the sensation received when resting the hand on the head of a purring cat. In applying the ear it seemed in no way to resemble the ordinary muscle note, but seemed louder, coarser, and interrupted. Fibrillary tremors were also present in the gluteal region, the muscles of the thigh, and the calf muscles. There was also slight tremor of the lips, and marked tremor of the tongue. All the muscles of the trunk and legs appeared small, but wasting, if present, was not excessive. Pain was absent, except in the lower dorsal and lumbar region of the back, where dull and persistent aching was complained of. The knee jerks were not changed, unless they were slightly below normal. Electrically there was a slightly lessened response, especially in the muscles about the shoulders. The sphincters, it should be stated, had never been involved. The hands and feet were cold and livid.

A general tonic treatment, together with rest, resulted in little or no change in the patient's condition, and the pain in the back persisting, the white hot iron was freely applied to the spine. The effect upon the pain was almost immediate. A month later some trace of pain still persisting, the cautery was applied a second time. From this time on a decided improvement seemed to have been inaugurated. The pain disappeared entirely, and there was a steady increase in muscular strength. By the following June this increase was very decided, while all traces of anæsthesia had disappeared, and the tremor in the hands had become very slight.

Up to the present time there has been a steady maintenance of the improvement, although a complete recovery has not been attained. The patient, though still weak in his legs, walks with ease and without assistance. Fibrillary twitching can no longer be seen in the buttocks and legs, though they can still be detected in the shoulder muscles, much less marked, however, than formerly. The muscles everywhere feel firmer. The "purring" sensation so marked at one time in the forearms can still be elicited, though it is much diminished. Speech has improved very much. Whistling, however, still requires a special effort, and there is still noticeable a slight droop of left angle of the mouth.

Case II.—H. M., aged 27, white, laborer and native of Ireland, was admitted to the Philadelphia Hospital, July 24th, 1888. Family history was as follows: His father had died at the age of 40, of some affection of the heart, his mother at 30, of measles, while three brothers had died in childhood. Two sisters, aged respectively 25 and 30, are living and both healthy. He knew of no hereditary disease in his family. He, himself, had typhoid fever when 4 years of age, but, with this exception, had been perfectly healthy. He had never contracted venereal disease, and had never been intemperate.

In August, 1887, while working in the street, he was overcome by the heat and fell unconscious to the ground. He remained unconscious for eight days. On recovering consciousness he remembers suffering from headache and dizziness. He felt very weak, but was able to walk. He soon noticed, however, that his ankles were beginning to give way, and that his weakness was increasing. In a short time it became impossible for him to walk, and the weakness had also involved the arms. During this time he "had pains all over," and when asked to more explicitly locate these pains pointed with tolerable accuracy to the regions traversed by the principal nerve trunks of the arms and legs. His paralysis appears to have been progressive, and in two months involved all of the four extremities. He remained in this condition, without much change, for three months. Subsequently he improved and gradually regained power over the legs, so that on admission he could walk with the aid of crutches, and had pretty good use of his hands. On further questioning, he says that his back was, during the severity of the attack, so weak that he had to be propped

up when sitting in bed to prevent his falling over. When questioned again as to the time at which the hands and arms were paralysed, said that he remembers distinctly that they were affected before the feet. He also suffered very much from pain in the back.

Examination disclosed marked atrophy of the muscles of all of the extremities. It was most marked in the deltoids and in the muscles of the arms and forearms, while in the hands it was noticed that the thenar and hypothenar eminences were much flattened. These muscles, together with those of the upper part of the trunk, show marked fibrillary contractions. The face, also, looked relaxed and flattened, and there was marked tremor of the lips and tongue. On the attempt to whistle, slight drooping of the lower lip on the right side was disclosed. The right side of the tongue seemed smaller than the left, while distinct wasting was present in the muscles of the right cheek and right upper lip. In the forearms a coarse thrill was felt similar to that described in the preceding case. It had the same "purring" character, and was most marked in the extensor muscles. The extensors everywhere, it should be stated, were most affected. There was a distinct tendency to wrist-drop and foot-drop. In the legs fibrillary tremor, though present, was not marked. Cutaneous sensibility was everywhere normal, except on the backs of the hands and feet, where a barely noticeable diminution had taken place. Patellar reflexes were markedly decreased on both sides. Grip much diminished. The extremities were blue and cold.

Examined electrically, very decided quantitative diminution was found in the muscles of the arms and legs, while in the thenar and hypothenar groups marked reaction of degeneration was present.

When admitted there was no headache, and vertigo, formerly complained of, had much improved.

As in the preceding case, little or no change was noted in the man's condition, and the pain in the back being very severe and persistent, the actual cautery was thoroughly applied to either side of the lower dorsal and the lumbar spine. As in the preceding case, again decided lessening of the pain followed. A second burning, three weeks later, was followed by its complete disappearance. Subsequently there was also a decided gain in strength in the legs which the patient, himself, attributed to the cautery. Recovery in other respects was not as marked as in the preceding case. The sum total of improvement is, however, very considerable. The patient walks better, though he still needs a cane or a crutch, and has made a decided gain in the use of his hands. Fibrillary tremor is not as marked as before, and there is a better electrical response. Reaction of degeneration can no longer be detected in the thenar and hypothenar groups.

These cases to a great extent resemble each other, and yet it is probable that some important differences obtain in their detailed pathology.

In Case I the symptoms appear to be referable to the cord alone. Certainly a myelitis involving mainly, but not exclusively, the anterior gray cornua affords an ample explanation of the symptoms.

In Case II, however, the history of severe pain along the inner aspects of the arms and backs of the thighs, as well as the reaction of degeneration in the muscles of the hand, compels us to take into account the peripheral nerves. It should be stated that a careful search for tenderness over the nerve trunks was negative, except over the peroneal nerve of the left leg, where an area about an inch and a half long, just below the popliteal space, was found sensitive to pressure. While, then, we have reason to assume a more or less marked neuritis, the severe pain in the back, and the decided and the almost immediate improvement in the power of the legs following the use of the actual cautery leave no doubt that, to some extent at least, the cord also was involved. Certainly in neither of these cases were the symptoms exclusively spinal or exclu-

sively peripheral. How, otherwise, could we explain such symptoms as delirium, headache and vertigo? Evidently, in each instance the heatstroke acted as a general disturbing cause, capable of affecting various portions of the nervous apparatus. As regards details, we are, of course, forced more or less to speculation. That, however, the sunstroke was the prime and sole factor in the production of the symptoms, there can, I think, be no doubt. In neither of the cases, for instance, did alcohol play a part. Case I was a moderate drinker. Case II was habitually temperate, though, as he told us, his friends had, at the time of his stroke, given him whiskey in their efforts to save him. It is very improbable, however, that this had anything to do with his subsequent trouble.

On the other hand, if it be true, as first claimed by H. C. Wood, that in sunstroke there is developed a poison in the blood, we have an abundant explanation for the symptoms presented by these cases. Certainly, if there be such a general cause as is implied in a poison circulating in the blood, there is no *a priori* reason why sunstroke should not at times result in inflammation of the cord or inflammation of the peripheral nerves, just as we know it more frequently to result in inflammation of the brain or its membranes.

RUPTURE OF KIDNEY; RECOVERY WITHOUT OPERATION.

By George Dock, M.D.,
Of Galveston, Texas.

E. J., aged 28 years, in good health, fell from a platform to a lumber pile five feet below. Though the distance was short, the man was walking rapidly and struck with a good deal of force, the blow falling on the left side below the false ribs.

An hour later, the patient states, he felt sick, vomited, and passed urine. The latter was clear in the beginning, but at the end blood was passed; there were no clots. Urine was passed twice again in the following night, but its appearance was not noticed. For some days afterward pain above the pubis during micturition prevented the man from urinating often. The whole quantity passed was small, the color red.

A week after the fall the patient had cramp in the left side, and then noticed a swelling below the ribs. Fever of mild grade developed.

The patient came under my care October 19th, 1899, ten days after the accident. He was then anæmic, the skin sallow, expression anxious; temperature about 100°–101°F. In the left side, below the end of the tenth rib, there was a flat swelling about the size of the palm. It was distinctly outlined, tender, dull on percussion. Urine was passed regularly and freely. The amount was reduced to about thirty ounces a day (a small quantity, of high specific gravity, is normal in hot weather in this locality), specific gravity 1035, reaction neutral or faintly acid. Freshly passed, it was of a reddish black color, depositing a copious, finely granular, reddish-brown sediment, the supernatant fluid being deep red and smoky.

The diagnosis of rupture of the kidney being clear, the general and local symptoms seemed to indicate an operation for the closure of the bleeding vessels and, if necessary, removal of the kidney. Pending preparations for this, however, the results of microscopic examination of the urine made me decide on an

expectant policy. From the appearance of the urine it seemed as though the man was losing a very large amount of blood. Under the microscope were found many red corpuscles in good preservation, a smaller number of "shadows," and a considerable number of leucocytes, as well as a good deal of reddish granular débris. Freshly passed and well agitated urine in an Abbe-Zeiss apparatus showed in a cubic millimeter 12,000 red corpuscles, 4,500 "shadows" and 85,000 leucocytes.

That so small a proportion (including shadows, equal to $\frac{1}{300}$ of the volume) of blood could produce so deep a coloration seems impossible, and of course it is likely that many "shadows" escaped enumeration and that other corpuscles were entirely broken down and the coloring matter set free. It was impracticable at the time to settle that question, but I was convinced that the daily loss of blood was less than was at first suspected.

The patient was kept in bed, on low diet, and ergot was given in full doses. Four days after admission the tumor had increased in size, forming a prominent, oval swelling, reaching nearly to Poupart's ligament below; the median line in front, and back to the spine. It was elastic, resistent and tender. The urine presented the same macroscopic and microscopic characteristics for several days, and the ergot was substituted by acetate of lead and tannic acid.

Three weeks after the accident the patient had a rigor, without rise of temperature, and another on the following day. About that time the tumor began to diminish. There was still a good deal of tenderness over the eleventh and twelfth ribs near the angles. By the fourth week there was no fresh blood, but a few "shadows" and a small quantity of coloring matter in the urine. As the blood decreased, an increase of leucocytes was noted, forming a sediment of moderate amount on standing. This symptom of pyelitis also gradually disappeared, and the patient was discharged, with a minute amount of pus in the urine, but much improved in general health, seven weeks after the accident.

I assumed that in this case there was a rupture of the kidney involving the hilum. This assumption was based on the occurrence of hæmaturia and subperitoneal effusion. It is borne out by the experience of other observers, as shown by a recent contribution of Herzog.[1] He finds, in agreement with the results of Maas, Edler and Gravitz, that by indirect violence, as by a fall, rupture of the hilum always occurs, whereas direct contusions cause irregular lacerations of the anterior surface of the kidney. Herzog confirmed this by experiments on rabbits and guinea-pigs. By blows on the posterior and lateral renal regions he produced rupture of the kidney at the attachment of the pelvis, with retro-peritoneal hemorrhage.

The following observation bears on the subject of localization, but cannot be included in the statistics, for obvious reasons:

T. R., while delirious, walked out of a third-story window, fell to the ground, was picked up in collapse and died soon after. At the autopsy I found that from the external contusions he must have fallen on his back. In addition to various fractures of the long bones, there were several of the ribs and costal cartilages, the latter due to *contre-coup*.

[1] Münch. med. Woch., Nos. 11 and 12, 1890, Centrablt. f. Chirurg., No. 36, 1890.

There was a large hæmatoma extending behind the pleura and peritoneum, the pelvis being entirely filled. The right kidney was torn in a ragged manner from the upper end of the hilum to within one-half inch of the convex outer margin. The renal pelvis was surrounded by blood; the bladder contained a few drops of bloody urine.

Herzog, in the paper referred to, gives a summary of ninety-two cases of subcutaneous injury of the kidney, with sixty recoveries and thirty-two deaths. In view of the experiments of Maas, proving that even serious injuries can heal, while milder lesions recover perfectly; and considering the difficulty of operating in such cases,[1] expectant treatment may well be recommended.

The counting of the blood corpuscles may prove of value as an additional guide to the urgency of indications for an operation.

A CASE OF OPIUM POISONING SUCCESSFULLY TREATED BY HYPODERMIC INJECTIONS OF STRYCHNINE AFTER THE FAILURE OF OTHER MEASURES.

By Clara T. Dercum, M.D.,
Clinician to the Women's Hospital.

On the eleventh day of September, 1890, at midnight, I was summoned to see Mrs. M., a widow aged 44 years, who had taken, as I was informed, an overdose of laudanum. She had purchased two half-ounces during the afternoon at separate times, and had swallowed this entire amount, in addition to a quantity which she had on hand, the whole being estimated at about two ounces. This would represent ninety-six grains of the powdered drug, or forty-eight grains of the extract.

Instead of being somnolent, she was wide awake, very much excited and talked freely about what she had done. As she admitted, she had been out during the evening and had returned to her boarding-house at 11.15 P.M., she had swallowed the drug while on the street and before entering the house, and had taken the precaution to destroy the bottles. She retired immediately, but the drug did not at once have the effect anticipated. She had previously made detailed preparations for her demise by writing letters of adieu to various relatives. The horror of death, however, and the dreadful realization of what she had done, together, perhaps, with the transient excitement sometimes produced by the drug, prevented the immediate onset of sleep.

I saw the patient at 12, midnight. Some forty-five minutes, probably, had elapsed since the ingestion of the opium. Her respirations were irregular, jerky, occasionally sighing and fifteen per minute. Her pulse was full, strong and beating with unusual force. Its rate was forty-five per minute. Her pupils were contracted to the size of pin points. Her breath smelt strongly of laudanum. She was much excited, and repeatedly begged me to give her something more to make her sleep.

As soon as mustard could be procured, a heaping tablespoonful in a glass of warm water was administered, with the desired effect of free vomiting. Repeated doses of lukewarm water were then given, resulting in frequent emesis and thorough washing out of the stomach. The ejecta smelt strongly of the drug.

On account of the enormous quantity of the laudanum which had been taken, and

[1] Koenig, Chirurgie.

because of the great contraction of the pupils and the evident slowing of the respiration, I felt, in spite of the absence of sleep, much alarmed. As the sequel shows, this alarm was abundantly justified. I decided to administer atropine hypodermically, and while the drug was being procured sent for my neighbor, Dr. Eleanor C. Jones. As soon as the atropine arrived we administered one-ninety-sixth of a grain. The patient beginning to show signs of sleepiness, the dose was repeated in fifteen minutes. Respiration becoming slower and slower and somnolence more and more evident, the hypodermic injections were steadily repeated at intervals of a quarter of an hour. Strong coffee in the meantime was administered by the mouth, but the stomach failed to retain it. Citrate of caffeine was next administered, five grains at a time. Three doses in all were given, only one of which, however, was retained. We also gave her five grains of this drug hypodermically.

At about 1 A.M. she began to grow very sleepy, and begged us to let her alone. Not much effort, however, was required to keep her awake until about 2 A.M., when drowsiness was marked, though the patient was still capable of being aroused We now had her walked up and down the room between two men. This was kept up until about 3 A.M. At this hour a change in her pupils was perceptible. They were slightly less contracted. Her skin also was suffused, being decidedly reddish in tint. Somnolence, however, was excessive. We now took her into the yard of the house, beat her with wet towels, jumped her up and down, threw ice water on her chest every few moments, but without result. At 4 A.M. she was in a state of profound coma, and even the application of a powerful faradic current failed to arouse her. The pupils were dilated very widely, complete mydriasis having taken place, indicating that the full physiological effect of the atropine had been obtained, (or that the depressing influence of the poison upon the cerebral centres was gaining the mastery), as, in spite of this, her respirations were only five per minute and her coma profound.

We now began to fear that death was inevitable. Her clothing, which was thoroughly wet, was removed, a blanket was wrapped around her, she was put to bed and the faradic current constantly applied. However, the respirations still became slower, so that at 6 A.M. they averaged only five in two minutes, and were extremely shallow. We still kept on giving the atropine, but without result. Up to this time five-twelfths of a grain had been exhibited.

I now conceived the idea of giving her strychnine, hypodermically. My attention had been particularly called to the drug as a powerful respiratory stimulant by the paper on "Anæsthesia," which was read by Dr. Horatio C. Wood, of this city, before the Tenth International Medical Congress, at Berlin, in August of last year. From the experiments made at the laboratory of the University of Pennsylvania, it was shown that in dogs, in whom respiration had entirely ceased during chloroform or ether narcosis, the injection of strychnine into the jugular vein produced at once large, full and rapid respiration.

At 6 A. M. the first hypodermic injection of strychnine, one-sixteenth of a grain, together with one-thirty-second of atropine, was administered. At 7 A. M. it was noticed that her respirations, although not more frequent, were deeper and fuller. The strychnine and atropine were repeated hourly until 12 o'clock, noon. Every hour her respirations slowly increased in rapidity and fulness, until at 1 P. M. they numbered eight per minute.

During the morning three or four injections of strong coffee were given per rectum. The application of the faradic current, it should be remembered, had not been abandoned for a moment. Her urine was also drawn, at intervals, to prevent reabsorption of the opium, as some authorities claim that the drug is eliminated by the kidneys.

At about 1 P. M. consciousness slowly began to return, and some strong coffee was administered by the mouth. The physiological effects of the strychnine now began to manifest themselves in convulsive twitchings of the hands, in retraction of the head, and also in marked stridor following attempts at swallowing. It now looked as though we were going to have a case of strychnine poisoning to deal with, and we came to the conclusion that we might as well have allowed her to die of the opium as to kill her with strychnine. Bromides

and chloral were sent for, so as to have them on hand in case they were required. Fortunately they were not needed. The rather alarming symptoms produced by the strychnine passed off in the course of a few hours. At 5 P. M. she could swallow without much difficulty. Cracked ice was now freely given, as the dryness of the mucous membranes, caused by the atropine, was very distressing. At 6 P. M. her respirations were twelve per minute; her mind still somewhat confused. At 8 P. M. her respirations had increased to fourteen per minute; she was perfectly rational, and filled with shame and remorse at the notoriety caused by her conduct. At 9 P. M. she was taken to the German Hospital. Here she finally made a complete recovery. The action of the drug having worn off, she, of course, suffered from the bruises, the result of the flagellations.

This interesting case teaches us a most valuable lesson. In looking over the literature of opium poisoning I can find no record of strychnine as an antidote. I fully believe that the strychnine was the chief factor in the recovery in this case. The condition of the patient when it was first administered was as follows: Complete relaxation of the muscular system, with puffing respirations which numbered only two and three per minute, and which were extremely shallow. Each breath she drew we expected to be her last, and death seemed to be near at hand. Atropine had been pushed until its full physiological effects had been secured, and even then we persisted in its use without any obvious results. Under these circumstances, I think, we are forced to attribute our success to the strychnine, as it was only after its use that any improvement became apparent; in fact, until its administration, the case was slowly but surely progressing toward dissolution. However, the atropine probably antagonized the action of the opium to some extent. Sleep seemed delayed by its use, though it did not prevent the final onset of deep coma, nor did it prevent the progressive paralysis of the respiration. The pulse during the whole time was full and rather strong, and after the use of the atropine it increased rapidly from forty-five to one hundred per minute, which rate was maintained throughout.

In order that the thorough trial made of the atropine may be appreciated, let us sum up the various doses given, and their frequency. During the first two hours one-ninety-sixth of a grain was injected hypodermically every fifteen minutes. During the succeeding four hours this dose was increased to one-forty-eighth of a grain, and repeated at the same intervals. Finally, during the next six hours one-thirty-second of a grain once an hour. The entire amount administered equalled nearly five-eighths of a grain.

The other drugs were used as follows: Twenty grains of citrate of caffeine were given during the first three hours, of which fifteen grains were administered by the mouth, and five hypodermically. Lastly, one-sixteenth of a grain of strychnine was given hypodermically, at intervals of an hour, until seven-sixteenths of a grain had been administered.

In closing, it may be worthy of remark that the successful issue of the case depended largely upon the steady maintenance of the treatment. For eighteen consecutive hours no intermission occurred in our efforts to save the woman's life.[1]

[1] This case is interesting, also, as suggesting a line of research in the physiological laboratory. If strychnine is a respiratory stimulant in anæsthesia, it should also yield results in dogs poisoned by opium.

SOME OBSERVATIONS ON KAKKÉ, THE NATIONAL DISEASE OF JAPAN.

By Albert S. Ashmead, M.D.,
New York.

The word kakké is of Chinese origin. The disease was represented as peculiar to Japan by one of the first authors, who brought it to the notice of European science, but it was named and described by Chinese authors long before anything was written about it by the Japanese. This is the conclusion to which Hassimoto and Scheube separately arrived, after careful investigation. The true Japanese name, according to these authorities, was *ashike,* which is but the translation of the Chinese name. Hassimoto, in his "Thesis of Wurzburg," 1876, asserts even, that kakké has been known to the Chinese for more than seven hundred years. Scheube[1] entirely agrees with him. European residents are exempt from the disease; so, too, strangely enough, are the Chinese residents. Anderson[2] thinks, however, that there exists a receptivity in Europeans, but slight enough to be atypical. Wernich[3] reports two cases in Caucasians, an Italian and an American, among two hundred cases treated by him. According to Remy,[4] the name of kakké is maintained because the disease differs from beriberi in one important point, that very exemption of the Caucasians. Baelz,[5] in his "Summary," published in 1887, states that the Chinese are seldom affected by kakké, the Europeans never or hardly ever. He does not absolutely affirm the never. The medical officers of the French naval station at Yokohama mention having seen atypical cases. I myself have met with one European case, a native of France, that was typical and fatal. Later observers contend that kakké is not distinct from Ceylon beriberi. I shall not enumerate the different forms of the disease, as they are well enough known to the profession.

The time when kakké is at its acme is the wet season, June, July and August, a period which the Japanese call "*nubi,*" a name significant of the prevalence of humidity, rainfalls and mould. The naked earth is as green as a lawn during the wet season. All clothing, the floor mats, the sliding paper walls reek with moisture. You can wring the water from everything. The soil of the rice-fields, charged with human excrement, is wet and festering. Therefore, many persons consider kakké as a kind of rheumatism, or a climatic disease; for it must be borne in mind that the Japanese sleep on the floor, and

[1] Die Japanische Kakké. Archiv. f. Klin. Med., 1882.
[2] Kakké. Transactions of the Asiatic Society. Japan, 1878.
[3] Klinische Untersuchungen uber die Japanische Varietät der Beriberi Krankheit, 1875.
[4] Archives Générales de Médecin de Paris, 1883.
[5] Infect. Krankheiten, Mittheilungen der Deutsch, Gesell., 1882.

that the floor is only about two feet from the ground. The disease is always endemic—in Tokio, at least—during these wet months, which are, at the same time, the hottest months of the year. A damp climate, on a widely-open seacoast, favors the eruption of the disease. According to the most ancient opinion traced back to the Chinese, and which is largely adopted by the Japanese physicians, the origin of the disease is to be sought in a telluric miasm. We read in a Chinese book called "Sen kin ho, The Thousand Golden Remedies," dated 640 A. D., that kakké is caused by a gaseous poison. This poison exists in the earth, from which emanate cold, heat, air and humidity. As the foot is continually in contact with the earth, the legs are first attacked by the poison. By the European authors the existence of a poison is unanimously admitted; but none has ventured, as yet, to define the precise agent. Wernich[1] alone describes the disease as a simple disturbance of nutrition.

Kakké develops itself within certain limits and on certain points of a territory. It affects, in preference, persons coming from healthy parts of the country, and generally breaks out during the period of acclimatization. It has appeared on ships in harbors ravaged, at the time, by the disease; but not, as beriberi, on a ship on the high sea, at the time when the period of incubation must have been long past. No facts have come to our knowledge which would justify us in believing that the disease can be produced in a man isolated from dry land. All this speaks for telluric infection.

But though we might feel inclined to explain kakké by a telluric poison, yet we see many reasons for associating with this stationary influence, other more movable influences, agglomeration of people, atmospheric conditions, insufficient nutrition, carbonic acid intoxication. One of the weightiest of these reasons is the displacement of the centres of infection. In the historical account which Remy gives of kakké in China and Japan, we are enabled to follow these displacements. Originally from China, common there in the first centuries of our era, kakké seems now to be of rarer occurrence in that country. Remy seems to think that the children of the Empire of the Midst were not in those remote times capable of defining very clearly the different diseases; but the descriptions of kakké given by them, in their "Thousand Golden Remedies," are exact enough to satisfy the most critical reader. The Chinese evidently knew the forms of the disease, liquid and dry. They speak of their own emigrations, of their arrival into regions where they found kakké rampant, and of a fierce onslaught made by the disease on the newly arrived. But as to the cause of the diminution of the disease among them in succeeding years we are left utterly in the dark. We know only that when it vanished in China it appeared in Japan, and that it has steadily grown since. Kangawa and Noro Gendjo speak of kakké as of a new disease which had made its appearance in 1740 A. D. Imperfect descriptions of a disease supposed to have been kakké would date it back to 808 A. D. But it appears that this latter disease was of little gravity. Towards 1740 severe epidemics broke out, and the physicians were greatly puzzled. The remedies known in those times were not adequate to the work that was to be done, thinks Noro Gendjo.

[1] Loc. cit.

The Dutch Doctor Koempfer, who resided at Desima during the years 1690-1692, makes no mention of kakké, and he certainly would have heard of the disease through his native disciples. Hence, it is obvious that if the disease did exist before, either the physicians did not recognize it, or that its character changed altogether afterwards. But we must here observe that it is a peculiar characteristic of the Japanese mind zealously to conceal from foreigners anything that they may consider as pertaining to the weak side of their nation, for instance, all that belongs to leprosy, as much as they can.

Scheube thinks that the disease, as we know it to-day, made its first appearance in Japan in the middle of the last century. Kioto and Tokio were the first centres of infection; afterwards other cities became involved, from Hakodate, Yokohama, down to Nagasaki. Tokio is the most active centre of all. A short stay, to those of the predisposed race, is sufficient to produce the disease. Sailors on shore quickly succumb; an entire crew, sometimes, will go to the hospital. Some individuals strangely resist and escape the infection.

The crowding together of men and dwellings seems to be the necessary factors in the production of kakké. Baelz acknowledges the influence of crowded humanity, while admitting an undetermined poison. He thinks that the nightly crowding to rest is a powerful morbid cause. Among the various classes of people, with which the disease is common, the habit of sleeping in enclosed spaces, such as dormitories, barracks, cabins of ships, etc., is general. It happened once that on a ship, where the allotted sleeping space for the men was scanty, out of a crew of 300 men, 70 sickened and 20 died. Anderson refers also to the want of ventilation in their box-like dwellings, tightly closed at night, and wonders how they can sleep in them at all without being asphyxiated. Baelz gives the following account of patients treated for kakké in the hospitals of Tokio, in 1881: There were 889 students, 1000 soldiers and sailors, 62 peasants, 154 officials, 119 laborers and 469 merchants. Students, soldiers and sailors almost exhaust the contingent; these are the persons who crowd at night in dormitories, barracks and cabins.

That atmospheric conditions have something to do with the development of kakké, might be inferred by the fact that it appears only during the wet and hot season. That the vicinity of the sea is not an indispensable element is proved by the fact that the first centre of infection was Kioto, a city far distant from the coast, and that it now it exists in divers cities of the interior.

Kakké seems to be a disease of the sea level, and altitude an element of its cure. Tokio, its chief centre, is a volcanic plain, surrounded by an amphitheatre of hills, the slopes of which are places of refuge for the victims of kakké; even this slight elevation gives relief. Mountains remain intact, and sufferers repair thither to recover their health. On the other hand, the mountaineers who come to the city fall victims to the infection.

Inundation of a miasmatic soil seems to be necessary to produce kakké; the drainage of the same produces malarial diseases. In 1880, as noted by Baelz, the summer was rainy and at the same time cold, and there was but little kakké. Successions of rain and burning sun are most essential conditions. Concomitant, damp and hot weather has been also noticed in India. The south-

west trade winds, producing rain in summer, seem to be an influence. Kakké ceases spontaneously on the appearance of the cold season. During the hot and wet season the inferior plants, the prolific mould, are developed with extraordinary rapidity. This induced Dr. Baelz to look for the parasite. But although Koch's method was carefully employed, nothing was found in the blood or in the tissues of the living or dead that could be constructed into an organized germ. The poison affects those subjects only who remain for a time within the toxic atmospheric influence, or those who oppose a feeble resistance to the process of acclimation or some debilitating agency.

The poison is not directly transmitted from man to man. It is sometimes arrested by an intervening hill, on opposite sides of which people may dwell who have daily intercourse with one another.

Remy, regarding the question of imperfect nutrition, declares the disease is not anæmia of the tropics. Wernich, on the contrary, considers it solely a disease of the circulation, due to insufficient alimentation, the predisposition of a weakened vascular system, the exposure of the skin to a hot and damp temperature, and finally the influence of various debilitating agencies. It is on account of their well regulated life, he says, that women, children and the old are exempt from kakké. Baelz and Scheube reject the theory of inadequate alimentation, claiming that soldiers and sailors are more affected, and they are beef-eaters. I have myself discussed the question of the nature of kakké with my native colleagues in Japan, and found that there was no agreement among them on the subject.

The eminent Professor Sasaki, who was the superintendent of my hospital, agreed with me that the disease was the result of carbonic acid intoxication, and this opinion seems to be borne out by most of the facts pertaining to the malady. For instance, those persons who sleep in crowded rooms are principally affected. The localities where the disease mostly is prevalent are low, depressed, crowded regions surrounded by hills, and during the heavy rains the vitiated air would, of course, be kept in place with all its poisoned humidity. It is a fact that the blood of a kakké patient is imperfectly aerated, and the amount of carbonic acid it carries to the lungs is greatly increased. The blood is very fluid and flows freely on post-mortem section. The climatic relations do not permit sufficient oxidation in the lungs. Naturally, decomposition of tissue cells charges the blood with carbonic acid, which, as the result of imperfect elimination, interferes with nutrition, especially among persons of sedentary habits. A supercarbonized condition of the blood is almost universal among the Japanese, owing to the burning of charcoal and imperfect ventilation of the houses. This interreres with the functions of the respiratory centres. In a wet season the natural elimination of carbonic acid from the air is not so rapid in depressed localities. In kakké, as in epidemic influenza, the filaments of the pneumogastric nerve are especially implicated, and thus we have respiratory and cardiac complications. Temperamental peculiarities alone in individuals resist the poison in different degrees. Thus, in our own hay-fever, only the most nervous temperaments are affected. The success attending the altitudinal treatment of the disease seems also to corroborate this

theory. Upon this hypothesis the oxygen treatment was tried at my hospital, and binoxide of manganese, or nitric acid as oxidizers were given internally, but without the success which we had, with some confidence, expected.

The imperfect skin development of the Japanese race may possibly have much to do with a natural or acquired peripheral nerve weakness induced perhaps by hot bathing or by glabrous race hybridity. All the etiological factors that have been enumerated by us do not explain why the disease affects only the Japanese race. In solving this riddle, the racial factors must be considered. Ethnologists tell us that the race is made up of several hybrid types, the Negrito, Mongol, Malay and Aino—black, yellow, red and white. The Polynesian black type is mingled with all the types. The Aino hybrid is rare. All these types are glabrous excepting the Aino, and he is exempted from kakké. On account of the Japanese belief that the hairy Aino is descended from a dog, intermarriage with the type has not taken place; which shows that to be decidedly glabrous was considered a distinction. Thus it came to pass that the race developed into an almost hairless people. In the study of leprosy race and nationality are very important, as it has been shown that among colored races the disease is more frequent than among the white. Europeans living in countries where leprosy is at home, lose their supposed immunity, which circumstance ought to impress us with the importance for our subject of the skin system which is more disposed to disturbances of nutrition, more vulnerable in colored races. This peculiarity may be in some manner related to the pigment element. The violent alterations to which the skin of the European is exposed through profuse sudoral excretion, through heat rashes, through melasmata and general discoloration of the complexion, become, in time, directly destroying influences (Baelz), so that his skin does not after a long season of such trials, afford protection to his peripheral nerve filaments. He becomes predisposed to leprous skin degenerations and neuritis, just like the negroid races. In the Japanese the absence of the protective hair of the skin increases the tendency to peripheral nerve diseases. The deficient clothing of the Japanese race and their custom of excessive hot bathing in the damp season, expose and maltreat these nerves still further. They have never been in the habit of protecting their skin; for the last thousand years the clothing of the Japanese has remained the same.

The different hybrids of the race resist the influence of their climate differently. It affects hairy men the least. That this fact of lessened skin resistance is appreciated by some races is shown in their custom of greasing the body in trying climates in order to protect the nerves centering in the skin, and thus to counteract the deadly influences of the seasons, such as cold, marsh fever, or other pernicious fevers. The Japanese and Chinese medical systems evidently appreciated these facts. This is shown sufficiently, I think, by their wonderful persistence in the use of moxa, acupuncture and hot bathing. Most of their remedial achievements have been accomplished through the skin system. Skin absorption is more rapid with the Japanese than with us, owing to their excessive drinking of hot tea and the violent transpiration which follows. From these com-

bined causes, deficient clothing, hot bathing, hot tea drinking, and glabrous condition, their skin has become exceedingly sensitive.

That there can be sufficiently close intimacy between the skin and nerves is shown in the disappearance of urticarial wheals when they are covered and protected hermetically. That the peripheral nerves are the pathological seat of kakké is generally admitted. Wernich, Anderson, Scheube and Baelz have all published the results of necropsies. In addition to œdematous and concurrent conditions, the principal pathological evidences were found to be fatty degenerations of general and cardiac muscular fibres, degeneration of peripheral nerve fibres and proliferation of the cells of the neuroglia. The whole peripheral system as well as the sympathetic is involved, excepting the nerves in the soles of the feet, which seem to be protected. The nerve lesions resemble those from experimental degeneration, or in consequence of section or ligature. (Baelz). It is also noted that the muscular atrophy is a result of the nerve lesion. Scheube concludes that the lesions are due to ascending neuritis, and atrophic myositis following in its wake.

Prof. Wood,[1] of the University of Pennsylvania, in his address entitled "Relations Between Trophic Lesions and Diseases of the Nervous System," says :

"*It is physiologically proven that the nervous system directly affects general nutrition.* All histologists agree that there is a very close connection between the peripheral ends of the motor nerves and the sarcolemma of the muscles; and all physiologists recognize that when a nerve trunk is divided the tributary muscles undergo a peculiar and rapid alteration of structure, which is not the result of the alteration of the blood supply, and is not dependent upon any action of the nervous system on the bloodvessels. It would seem that these well-known facts are in themselves sufficient to demonstrate that the nervous system has some direct control over nutrition, but the function of the muscles is so distinct from that of the other tissues, and is so palpably influenced by the nervous system, that not only clinicians, but even physiologists, have been led to consider muscle as something different from other portions of the organism in its subordination to the nervous system.

Passing by the physiological facts whose truths have been sufficiently long known to find their way into handbooks, we come to the very remarkable researches of Dr. W. H. Gaskell, which have been reported in the *Journal of Physiology*. It has been generally believed that the action of the vagus in inhibiting cardiac movements consists in an interference with the nervous apparatus of the heart, or, in other words, that cardiac inhibition is due to one set of nerves so controlling the ganglia in the heart as to prevent the nervous discharge which ordinarily causes contraction of the cardiac wall; and that in this interplay of nervous apparatus the muscular tissue is passive—is, as it were, only an interested bystander.

In the light shed by the researches of Dr. Gaskell and his followers, this explanation, however, appears to be incorrect. It has been shown that a weak interrupted current passed through a strip of insulated muscular tissue taken from the frog's heart, produces upon this tissue all the effects of inhibition ; and that atropine prevents such inhibitive action precisely as it prevents the action of the vagus upon the uninjured heart ; further, that if a strip of suspended heart muscle be firmly fastened in the middle by a clamp, it is possible to produce inhibition of the lower segment by stimulating with the weak interrupted current the part of the muscle above the clamp. Of the latter phenomenon two possible explanations offer themselves at once : first, that the inhibition of the lower segment of muscle is due to the excursion of the electrical current from the upper to the lower portion of the muscle

[1] University Medical Magazine, February, 1890.

second, that the upper portion of the muscle contains minute nerve fibres of inhibition passing down to the lower muscle mass. The correctness of the latter of these two explanations seems to be proven by the fact that the tightening of the clamp will prevent inhibition of the lower segment by the irritation of the upper portion of the muscle, since tightening of a clamp would arrest the functional activity of nerve fibres, but would not interfere with the downward propagation of an electrical current. Again, it was found by Dr. Gaskell, in the crocodile, that if the vagi be divided, and time allowed for the degeneration of the peripheral ends, the effect of the weak interrupted current in inhibiting the strip of isolated muscle was in great part or altogether lost.

This research of Dr. Gaskell has received confirmation in the work of Mr. T. Wesley Mills, of Montreal, upon the heart of a fish; he found that stimulation of the auricle leads to an immediate arrest of movement, and that atropine directly applied to the muscle prevents inhibitory arrest precisely as it puts aside in the mammal the ordinary effects of stimulation of the vagus. Dr. J. A. McWilliam found in the eel's heart, when the inhibitory nerves were fully excited, that the strongest mechanical, chemical, and electrical irritations of the heart muscle were powerless to produce contraction; showing that in the eel the inhibitory nerve, when excited, so directly and profoundly influences the cardiac muscular tissue as to deprive it entirely of its functional power. Such action as this must be exerted directly upon the muscle tissue. Dr. W. B. Ransom has proven that in the cephalopods the rhythmical contracting power resides in the muscular fibres of the heart themselves, and that the irritation of the so-called visceral nerves, which evidently correspond to the vagus of the mammal, inhibits the cardiac muscle by acting directly upon it.

These various facts demonstrate that the inhibitory nerves in the heart act directly upon the muscle; and it has been proven by Dr. Gaskell, that during the stimulation of the vagus nerve, although there is complete arrest of the functional activity in the muscle, there is a positive variation in the electrical condition; whilst any nervous influence which throws the heart into activity produces a negative variation. It has also been shown by Dr. Gaskell that the inhibitory process is beneficial to the cardiac muscle, and that during it damage to the tissue is repaired, and loss of power is regained."

Does not this show that the pneumogastric implication in kakké is due to the influence of a carbonic acid toxæmia operating through the heart or lungs upon the nerve filaments ?

Prof. Wood further says :

"I believe we must consider it definitely proven that the nervous system has the power of influencing nutrition; indeed, I will go further, and affirm that the only function which the nervous system possesses is the function of influencing nutrition. The peripheral afferent nerve-ending discharges its force because its nutrition is affected by the external irritant; this nerve force travels up the sensory nerve by producing an alteration in its nutrition, and the motor centre gives back the replying discharge of force because its nutrition is disturbed; whilst, finally, the outgoing nerve and the muscle suffer in their nutrition and become thereby functionally active Functional activity and exhaustion, functional rest and repair of the nerve, of the muscle, of the gland, all of them nutritive movements, each of them dominated by the nervous system. Such, in a sentence, is the ground-plan of the human organism."

Again :

"*Various lesions are the immediate result of previous nerve disease or nerve injury.*

The results of nerve injuries in the human being are even more decisive as evidence that the nervous system is capable of producing alterations in the nutrition of tissues than are the experiments made upon animals. As long ago as 1859, Charcot recorded two cases in which vesicular or bullous eruptions followed traumatisms of the nerves of the arm. In 1862 Reynaud recorded a case in which a similar eruption was the result of an injury to the cubital nerve, and was absolutely confined to the territory supplied by that nerve. Earl has recorded one in which the eruption was the result of an injury to the external cutaneous

nerve; Denmark, one in which the vesicular eruption was the result of injury to the radial nerve; Kuhl, one in which the injury of the brachial nerve was followed by herpetic eruption. I myself have seen cases of exactly this character—that is, cases in which traumatism of a nerve was followed in one or two days by an eruption of vesicles confined in location to the distribution of the injured nerve. Every clinician knows that the herpes zoster is usually connected with, and apparently dependent on, idiopathic or gouty neuritis.

It is hardly necessary in this assembly to do more than recall the thought to the large number of cases of so-called glossy skin reported by our late president, Dr. S. Weir Mitchell, during the War of the Rebellion—cases in which the changes in the skin followed directly upon a traumatic inflammation of the nerve; cases which have since been duplicated in the practice of most neurologists."

We have Japanese instances of atrophic nutritive histological changes exhibited in kakké; we have these also in leprosy. In the leprous neuritis we have circumscribed anæsthetic, non-sudoral, hairless spots, and in kakké neuritis we have post-mortem pathological changes in the peripheral nerves, a degeneration of nerve fibres, "like that which follows the section of a nerve" (Baelz).

That an alteration of the blood is a factor in kakké is proved, I think, by the fact that the neuritic symptoms are symmetrical.

As regards treatment, besides the altitudinal, which is found to be of some benefit combined with laxatives, diuretics, and legume diet, which latter is in some repute in Japan, the Japanese make use of their national remedies, moxa and acupuncture, tube-needles being used to drain the water from the tissues. Hot bathing is not considered good, as it further weakens the patient. In my hospital treatment of some 300 cases, we would send those able to walk to the adjoining celebrated hundred-stepped hill of Atanga-Yama, to obtain the relief promised by the elevation.

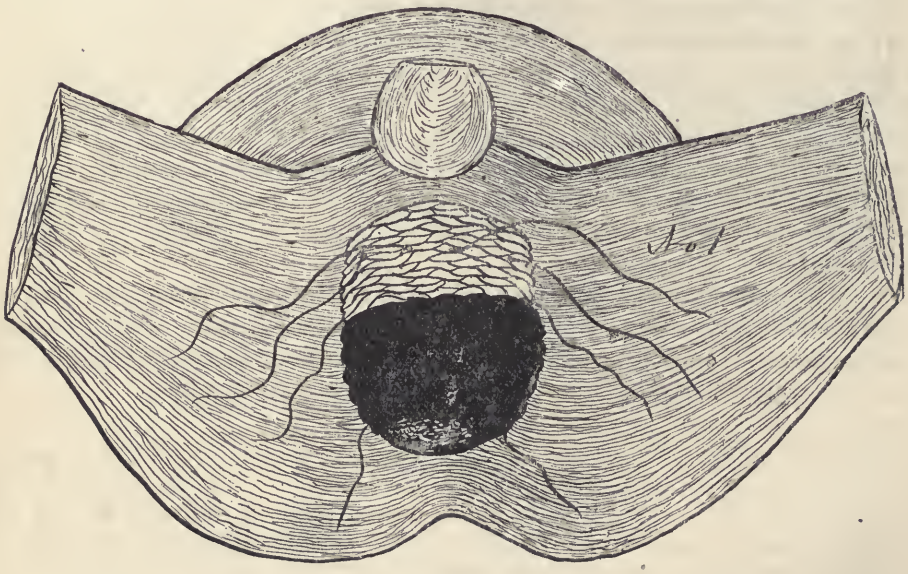
As I conclude this article, my friend, Dr. Suzuki, of the Imperial University of Tokio, and surgeon in the Japanese navy, now studying at the University of Pennsylvania, informs me that there has been discovered, quite recently, in Prof. Miyake's laboratory, a bacillus of kakké. *Qui vivra, verra.*

MEMORANDA.

ADENOMA OF RECTUM, WITH PROLAPSE OF BOWEL; REMOVAL OF MASS; RECOVERY.

Michael Fitzgerald, moulder, aged 65, was admitted to St. Joseph's Hospital for examination, May, 1890, with the following history :

He had suffered from constipation for the last two years, with occasional slight pain in left inguinal region. About six months since, while straining at stool, the rectum was prolapsed, causing considerable discomfort until replaced. The constipation increased from time to time, requiring large doses of castor oil or sulphate of magnesium to produce an evacuation.

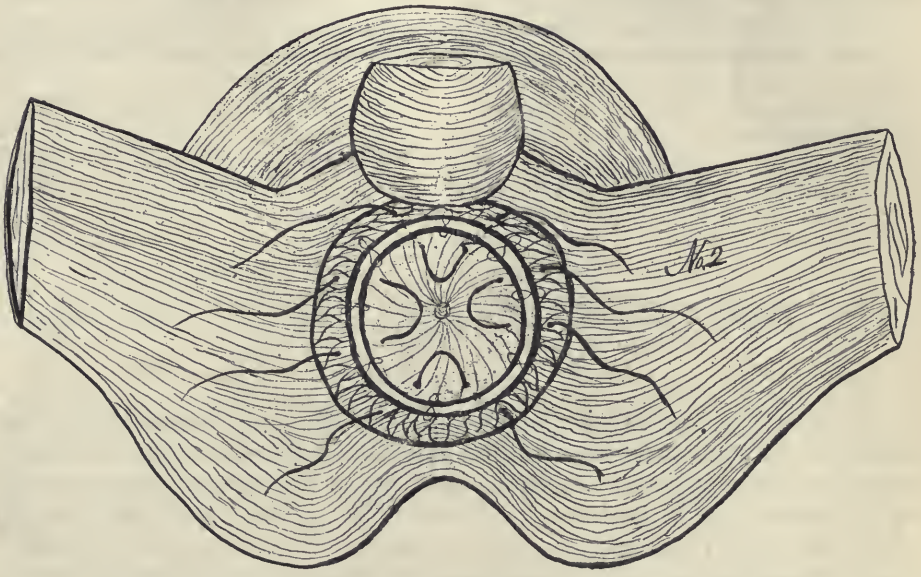


Upon examination during the prolapse, I discovered a growth the size of a hulled walnut, occupying nearly the whole circumference of the protruded rectum, which upon examination after its removal, proved to be an adenoma. After the bowel was thoroughly evacuated, the prolapsed portion with the morbid growth would recede beyond the reach of the longest index finger and remain for from two to four weeks, or until the upper bowel became overloaded, necessitating a cathartic. His appetite was poor, general health failing, and he was losing in weight.

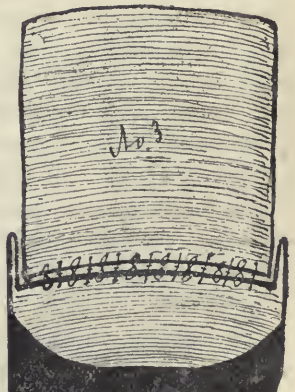
Removal of the entire diseased section of the rectum seemed to be the only remedy offering any possible hope of relief.

Operation.—September 26, assisted by Drs. Wonderlich, Vandervert and Lee Smith, I removed two and one-half inches of the upper rectum, including the morbid growth, a cathartic having been administered the previous evening to produce the required prolapse, as shown in diagram No. 1. The prolapsed portion was grasped by Dr. Wonderlich and

held while the patient was anæsthetized. I then introduced the index finger of my left hand up the rectum half an inch above the upper margin of the tumor. A curved needle armed with a strong black thread of silk was next introduced from the outer surface through the double walls—as shown in diagram—until it reached the tip of my introduced finger, then carried transversely half an inch, re-entered and brought out and the ends knotted together. Similar stitches were taken below and on either side and given to an assistant. The bowel was next seized with a pair of volsellum forceps and traction made, while, for want of a better clamp, an ordinary steel tuning-fork was slipped over the portion between ligatures and growth to protect the former, while with Paquelin's thermo-cautery I slowly amputated the latter, leaving it as seen in drawing No. 2. With a tenaculum, I drew down the inside



stitches and cut them, making eight sutures, which were tied over the edge. Other stitches were taken between, the stump thoroughly cleansed with carbolized water, dusted over with iodoform and returned inside the sphincter, as shown in sketch No. 3. A hypodermic injection of one-quarter grain of morphine was given, and the patient put to bed. Two arteries only were ligatured.



Sept. 27.—But little pain. Pulse, 80; no discharge.

Sept. 28.—Pulse, 70; no pain; dark discharge. Abdomen slightly distended. Some gas passing. Urinates normally. Morphine, one-eighth grain, every six hours.

Sept. 29.—Fairly comfortable. Some dark discharge. Washed out rectum three times a day with bichloride, 1 to 3000. No fecal matter passing. Pulse, 70; temperature normal. Slight tenderness over left inguinal region. Urinates normally. Tongue coated brown. Calomel and opium āā half grain every six hours. Morphine withdrawn.

Sept. 30.—Pulse, 70. Small movement from bowels, dark and thin; no fecal matter.

Oct. 1.—Bowels moved three times, with but little pain; some fecal matter. Pulse, 68; abdomen less distended. Continued calomel and opium powders. Rested well during night.

Oct. 2.—Some griping. Stopped the powder and sub-

stituted aqua cinnamomi ℥j, morphine, grain one-eighth, when necessary. Pulse, 70. Diet, milk and beef tea from the first.

Oct. 3.—Bowels moved twice; natural mushy discharge; some pain, but no blood or mucus. When the syringe is used, brings away some mucus and a little blood. Pulse, 68.

Oct. 4.—Natural movement without blood. Some swelling and hardness over sigmoid flexure. Says "wind collects there at times and swells him up, then passes off." Pulse, 60.

Oct. 8.—Three formed operations from bowels without pain, blood or mucus. Substituted for former injection: Permanganate of potassium, ℥j; water, ℥iv. Take a tablespoonful to Oss water and inject rectum once a day. Several of the silk threads passed with fecal matter; appetite good. Pulse, 68. Allowed to sit up in chair.

Oct. 9.—Still improving; abdominal tenderness nearly gone; treatment continued.

Oct. 18.—Convalescent; discharged. Since discharge, patient takes his daily walks up town without complaint of any kind.

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THE TREATMENT OF VARICOCELE BY EXCISION OF THE DILATED VEINS.

THOUGH it is undoubtedly true that the evil effects of varicocele of moderate extent are often overrated, and that in such instances palliative treatment is all that is required, there are certain cases in which the venous dilatation reaches such an extent that it gives rise to an amount of physical pain which entirely unfits the sufferer for the pursuance of business. Again, there are cases in which a comparatively slight development of the abnormal condition gives rise to a mental perversion entirely disproportionate, apparently, to its cause.

Such cases imperatively demand operation, and are commonly treated by ligature *en masse*. This is a method easy of performance and fairly safe in so far as the life of the patient is concerned. Its ultimate results are, however, frequently unsatisfactory, and a return of the trouble has been at times noted after each of the varied forms and methods of ligature.

The modern method—and one which, thus far, has seemed to accomplish permanent cure—consists in opening the scrotum, ligating the diseased veins *en masse* above and below, and excising the one or two inches of the varix lying between the ligatures. The operation is easy and can be rapidly performed. In only one instance of which I have knowledge has there been any mishap. Here the ligature was placed so loosely that some of the dilated veins slipped from its grasp. There was a continued bleeding, which was difficult to check, and which greatly prolonged the operation. The loose tissues of the scrotum became infiltrated with blood, suppuration subsequently ensued, and there was free sloughing. The patient ultimately made a good recovery.

I have performed the operation in three cases, in all of which the mass of veins was unusually large, and the consequent suffering disabled the patient.

CASE I.—John M., blacksmith, aged 38; strong, hearty man; always constipated. Noticed a swelling in the left scrotum for many years. Lately it has greatly increased in size. For two years has suffered much pain in the left testicle. The pain passes up to the left groin. Penis feels numb. Sexual desire gone. Erections last but a short time. Emission follows almost immediately on venereal excitement. Practically suffers from *impotentia coeundi*. Frequently giddy and confused. Feels constantly dull and heavy. Lately has not been able to work. On examination, a large varicocele of the left side was found. The testicle was about the same size as that of the opposite side.

The scrotum was opened, the entire bunch of dilated veins was ligated above and below, and an inch and a half of their continuity was excised. Healing by primary intention. Two years later the patient again appeared, suffering from rheumatism. He stated that following the operation full sexual power had returned, and that he no longer suffered from the head symptoms and the many pains and aches to which he was subject. Examination of the scrotum showed no traces of varicocele.

CASE II.—C. M., aged 22, cabinet maker; slender, delicate man. Constipated. For many years had noticed varicocele. Masturbated in early youth. Suffered from sexual weakness, *i. e.*, *impotentia coeundi*. Often intense pain in left scrotum. Exhibited the multiform symptoms of sexual neurasthenia. Examination showed a well-developed varicocele of the left side. A suspensory bandage had given no relief to the sufferings this occasioned. Operation as before. Primary healing. Two months later the patient, in the course of a debauch, was exposed all night to a driving rain-storm. Following this, an abscess formed at the seat of operation, and evacuated spontaneously. This shortly closed, and the patient expressed himself as relieved of his former sufferings. The varicocele did not recur.

CASE III.—W. M., aged 19. Typical neurasthenia. Masturbated in youth. Varicocele of long standing. Complained of great pain. Not relieved by wearing suspensory bandages. Sexual weakness was particularly noted, together with a long train of symptoms most varied in nature, and all producing a state of mind bordering on insanity. A large varicocele was found on examination, and the operation of ligature and excision was performed. Primary healing followed, and the patient experienced great relief from his distressing symptoms.

In these operations, after pinching up a fold of the skin overlying the diseased veins, transfixing it, and cutting outward, the blade of the knife was used but little. The veins were reached by rapidly tearing through the loose cellular tissue, thus avoiding bleeding, a very small amount of which in the scrotum may give much trouble. The veins were ligated with fine Chinese twist. Drainage was not used.

In closing the skin wound it is difficult to avoid inversion of the edges. This interferes with rapid healing, and exposes the wound to the danger of septic infection. To obviate the difficulty two thin lead strips were cut the length of the incision, and were placed each on one side of it. Through holes punched in these strips sutures were passed and secured. The skin edges were then approximated by a superficial continuous catgut suture.

For upward of a month following the operation a large indurated mass could be felt, corresponding in position to the proximal ligature. This, the thrombus, gradually disappeared.

In the first case reported the direct effect of operation upon the sexual disability is to be noted. Whether the other two cases were markedly benefited in this way does not appear.

A noteworthy fact in connection with varicocele is the rarity of spontaneous

rupture of the enormously dilated veins. Situated as they are, without adequate external support, and directly influenced by intra-abdominal pressure, we would naturally expect, reasoning from what is so frequently observed in the dilated veins of the leg, that this accident would be common. Though there are reported cases, these would seem to be exceedingly rare. It is probable that certain cases of epididymitis ascribed to "strain" by the sufferers may, in reality, be due to this cause, violent muscular effort having produced such an increase in intra-abdominal pressure as to rupture a weakened vein of the cord.

The advantages offered by excision over simple ligation are sufficiently great to procure for the former operation extensive trial. By means of incision all the diseased vein can be removed, and, as a result of this procedure, the cure seems to be radical. It is not yet possible to be positive upon this point since the cases contributed to literature are yet too few, and the time during which they have been under observation is too short. When any operation is justifiable, however, it would seem that, in the light of present knowledge, excision should be preferred.

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PYOKTANIN IN DACRYOCYSTITIS.

IN the December number of the MAGAZINE, Dr. G. M. Gould records his experience with blue pyoktanin in the treatment of a variety of superficial ocular inflammations, and lays particular stress upon its value in dacryocystitis and lachrymal conjunctivitis. He states:

"In chronically unhealthy conditions of the lachrymal excreting apparatus, I have found it to work like a charm in cleansing the channels and drying up the abnormal secretions. When the canaliculi or ducts are closed by constriction, they may be rendered patent by the usual methods, and with pyoktanin a quick cure thus effected. But there are many cases where the obstructed outflow is in part due to the inflammation and congestion caused by the presence of unhealthy tears and conjunctival disease, and in such cases, without other means, a drop of pyoktanin in the lower conjunctival sulcus, repeated twice a day for a few days, will work wonders. To the great diffusibility of the solution this effect is doubtless in part due."

My experience with the drug is in entire accord with the sentence just quoted from the paper of my colleague. I have used pyoktanin in a number of inflammatory affections of the cornea and conjunctiva with very indifferent success and often with disappointing effect, but in diseases of the lachrymal passages, especially when associated with accumulations of purulent or mucopurulent secretion in the tear sac, it is in many respects the most efficient remedy, in the rapidity of its curative influence, I have employed. Its value depends upon its pus-destroying properties and, as has been suggested, its great diffusibility. The latter quality is well illustrated by the following case:

C. D., a boy aged 6, had from birth suppuration of the right lachrymal sac and closure of the nasal duct. Pressure over the slightly bulging area of the tear-bag caused the exudation from both puncta of a thick, muco-purulent discharge. The lower canaliculus was slit and an endeavor made to pass a probe, which met with a firmly resisting stricture just beyond the lower part of the sac, or beginning of the nasal duct. The probe was not forced, neither was the stricture incised. Blue pyoktanin (1-1000) was injected into the sac. The next day the suppuration had diminished considerably, and on the third day only a slightly tenacious, clear fluid exuded from the puncta. The pyoktanin injections were repeated for three days, when, although no change had taken place in the character of the obstruction and no probe had been passed, a little of the solution found its way into the inferior meatus of the nose. A naso-pharyngeal examination revealed an abnormal shape of the lower turbinated bone of the right nostril and evidences of a severe rhinitis during the past. Treatment of this condition was undertaken by Dr. Alexander MacCoy, and after a few days the stricture was incised, the probe passed and the usual treatment instituted with very rapid improvement.

This case is interesting chiefly because, although an ordinary antiseptic solution like bichloride of mercury could not be forced through the stricture previous to its incision, the pyoktanin found a way.

Rapid cessation of suppuration in the lachrymal passages under the influence of this drug is illustrated by the following cases:

Mrs. D., a woman aged 50, with long-standing, chronic dacryocystitis, suffering from an acute exacerbation, with free secretion of purulent matter from the left sac associated with blepharitis and some ectropion, received for three days a pyoktanin injection after slitting of the canaliculus. At the end of this time the purulent character of the secretion had ceased. The drug was now substituted by a solution of bichloride of mercury and the usual treatment continued, with very happy results. It may be stated that the blepharitis during the three days that the analine dye was used showed no improvement, but yielded rather speedily to an aristol salve.

Mr. B., a gentleman over 80 years of age, had for many years obstruction of the left nasal duct and muco-purulent discharge from the tear sac of the same side. He had never permitted treatment until recently, when, as he was about to undergo a cataract extraction upon the opposite side, in which there was no suppuration in the lachrymal passages, but only a slight chronic conjunctivitis, the left canaliculus was slit, the nasal duct probed and the sac washed out with the pyoktanin solution, which passed freely into the nose. The next day there was marked improvement, the fourth day there was only a slight gummy discharge, and at the end of a week the abnormal secretion had absolutely dried up.

The next case illustrates the point made by Dr. Gould and other observers, that in lachrymal conjunctivitis the drug often does good without its injection into the sac or nasal duct, simply by placing a drop or two of it daily in the lower conjunctival sulcus.

A hospital patient, aged 57, had upon the left side an old stricture of the nasal duct, which in times past had been probed, but which recently had not been treated. There was slight distichiasis with some pannus in the lower portion of the cornea. The eye was tear-soaked, and pressure over the right lachrymal sac caused the exudation of a few drops of muco-purulent discharge. Without reopening the stricture pyoktanin was dropped into the conjunctival cul-de-sac, with improvement in twenty-four hours, and with such marked benefit at the end of a week that a semi-luxated, cataractous lens was removed from that eye with rapid healing of the wound. The ultimate result of vision to this man was not very good, owing to considerable vitreous disease and patches of atrophic choroiditis, but there was no reaction from the operation and no more irritation than could be accounted for by the fact that the man had suffered from misplaced cilia, which rubbed against his cornea. This fault was corrected before the lens was extracted.

These cases will suffice to show that the drug certainly exercises a very beneficial influence in drying up the abnormal secretions of the lachrymal passages. Further than this, however, it does not appear to have marked effect, and it has been my practice, after the cessation of suppuration, to substitute for it one of the well-known antiseptics. In most of the cases blue pyoktanin has been used; in a few treated with the yellow variety the result was not so good nor the application quite so free from irritation. However, my experience with the latter form of the remedy is very limited. Dilatation of the pupil following its use was not observed, neither was there any staining of the deeper structures. No particularly good effect occurred in eye affections other than those associated with the formation of pus, and in some cases of corneal ulcer the disease was apparently aggravated by the applications of the remedy.

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UNIVERSITY HOSPITAL.

[Service of Dr. J. WILLIAM WHITE.]

ROTARY DISLOCATION OF THE AXIS.

CASE I.—H. C., aged 22, was admitted to the University Hospital November 17th, 1890, with a history of having fallen down a flight of sixteen steps. He struck upon his head and was unconscious for three hours.

Above the parietal eminence, and slightly posterior to it, there was a marked contusion. No other surface injury could be found. The man was perfectly conscious, was able to walk, and exhibited no symptoms suggesting deep-seated or serious trouble beyond a peculiar position in which his head was held. This was precisely the position which would be assumed in tonic spasm of the left sterno-cleido-mastoid muscle. The head was slightly flexed and the chin was pointed toward the right side. The sterno-mastoid muscle was not more rigidly contracted than were the other muscles of the neck. The patient, however, was unable to move the head in any direction.

A careful examination at once showed that the spinous process of the axis was displaced to the left upwards of a quarter of an inch, and in the pharynx, corresponding to the position of the body of the second cervical vertebra, was found a marked projection. These signs pointed unequivocally to the nature of the injury, which was evidently a left rotary luxation of the axis.

The patient did not at any time suffer severe pain, and no paralysis or other symptom of pressure upon the medulla or spinal column could be detected. After a few days' confinement in bed with lateral supports for the head he was up and walking about the ward, and gradually acquired the power of partial rotation, flexion and extension, though these motions were very limited.

At the present time the bony displacement and the partial rotation of the head toward the right persist. The patient can move the head only to a very slight degree, but excepting for this suffers from no disability.

This case is of great interest, as it shows that luxation of the cervical vertebræ may occur without serious injury to the nervous elements. Indeed, in this case there seems to have been absolutely no injury of this nature. It is commonly taught and believed that the mortality of dislocations in this region is exceedingly high. It is perfectly possible to explain this, however, on the ground that the injury has been frequently overlooked; this is rendered probable by recent reports of a number of cases all terminating in recovery.

In regard to the treatment, it would seem safest to make no effort at forcible reduction, since there is no certain way of determining beforehand as to the integrity of the odontoid or its ligaments, and since the resultant disability is not so severe as to justify a manipulation which might endanger life.

MYXOMATOUS GROWTH OF THE POST-CERVICAL REGION.

CASE II.—L. J., aged 5 months, entered the hospital suffering from a growth which was observed at birth and which gradually increased in size. On examination a pedunculated tumor, the size of a small lemon, was found springing from the region of the spinous process of the second cervical vertebra. The growth had flaccid walls, was partly fluid and the tension of its contents was not influenced by crying or by efforts on the part of the child.

An operation was advised and the parents' consent obtained. The base of the growth was clamped in a carefully padded pair of forceps; the skin was dissected away from the pedicle; the latter was divided and the tumor was removed, together with its covering of cuticle, and the wound was closed, and dressed with iodoform collodion. During the operation scarcely a tablespoonful of blood was lost. The child reacted promptly and was discharged cured at the end of a week. A microscopic examination of the growth showed that it was mainly made up of myxomatous tissue.

It is extremely probable that this was originally a case of spina bifida, which became shut off by the closure of the vertebral arches, and which subsequently underwent myxomatous degeneration. The covering of the growth was precisely similar to that of spina bifida.

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EPISCOPAL HOSPITAL.

[Service of DR. RICHARD H. HARTE.]

REPORT OF FOURTEEN AMPUTATIONS RECENTLY PERFORMED AT THE EPISCOPAL HOSPITAL.

The following cases are reported in the order of their admission to the hospital:

Thirteen of the operations were performed for injuries received either on the railroad or in the machine shops; only one operation was done for disease. In every case the limb was carefully prepared, and strict antiseptic precautions observed. The injured part was always shaved and thoroughly cleaned with soap and warm water for at least six inches above the probable site of the flaps, any foreign bodies, as pieces of bone, wool, coal dust, machine oil, etc., being removed, followed by turpentine, soap liniment and alcohol in the order named. Finally, the affected part was washed with bichloride solution (1-2000), and wrapped in a towel wrung out in the same solution.

To combat shock the patient was immediately enveloped in warm blankets and surrounded with hot cans. A cup of strong hot coffee was given when the patient could swallow, and carbonate of ammonia, gr. v, with whiskey, half an ounce, the ammonia being repeated every fifteen minutes for one hour, and if these measures were not sufficient to cause reaction, hypodermics of whiskey, aromatic spirits of ammonia (30 minims each), sulphate of atropia, gr. 1-50, or sulphate of strychnia, if much muscular relaxation existed, were administered.

All the instruments were boiled for fifteen minutes in distilled water just prior to use. The sponges and towels were wrung out in hot bichloride solution (1-2000). All surfaces adjacent to the injured part were covered with bichloride towels, and during the operations an irrigator filled with the same solution played upon the wound at the will of the surgeon.

Antero-posterior or lateral cutaneous flaps were made according to the necessity of each case. A perforated rubber drainage tube, the size of a pencil, was always employed, and the flaps approximated by interrupted silk sutures. Iodoform was first dusted over the wound, then from twenty to thirty layers of bichloride gauze were applied, followed by a thick layer of bichloride cotton, the whole dressing having been sterilized by baking and held in place by a muslin bandage. No protective was used. As a rule the drainage tube was removed in ten days, and the sutures in from two to three weeks.

CASE I.—Anna M., aged 5 years, was brought to the hospital on July 9, with a compound comminuted fracture of the left leg, opening up the knee-joint. She had been run over by a dummy, and the tissues just below the tubercle of the tibia were fairly pulpified. When all bleeding points were controlled the limb was prepared as above described. Both internal and external stimulants were indicated by the child's condition of profound shock. She rallied sufficiently in eight hours to justify an operation. Dr. G. G. Davis amputated about two inches above the knee-joint. One hour later her temperature was 99°, respiration 28, pulse, 132. She was very restless during the night, never sleeping more than five minutes at a time, although bromide of potash, grains x, with sulphate of morphia, grain one-sixteenth, were given every three hours. The next morning her temperature was 100°, and it steadily rose until it reached 104 3-5°. Forty-eight hours after the operation, pulse 148, respiration 32. A sponge bath and a five-grain quinine suppository not exerting any antipyretic effect, it was decided to remove the dressings in the belief that the restlessness of the child had brought about some undue pressure, causing sloughing of the flaps.

On removal of the dressings, however, no external evidence of inflammation was discovered, the wound being perfectly aseptic. The stump was bathed in cool bichloride (1-4000), and a stream passed through the drainage tube. It was redressed with an antiseptic dressing. The nurse was directed to give a sponge bath followed by a quinine suppository, grains x. In four hours the temperature had dropped to 100°, above which it never rose throughout the entire convalescence.

The stump was dressed every four days. At the second dressing a small slough about the size of a dime was seen upon the lower flap, which, after separating, healed up by granulation. At the end of seven weeks the child was discharged cured.

CASE II.—James M., a brakeman, 18 years of age, received on the railroad a compound comminuted fracture of the right ankle; he was admitted to the hospital July 23. Dr. Harte decided upon amputation at the lower third of the leg. Twenty-four hours after operation his temperature was 101 3-5°, after which time it fell to normal and remained so throughout convalescence. Every four days the dressings were renewed without any evidence of suppuration, and at the end of six weeks he was discharged cured.

CASE III.—Thomas McG., a brakeman, 21 years of age, was admitted to the hospital

in the evening of July 6, with a crush of the left foot. Early the next morning a Pirogoff operation was performed. The man's condition was excellent; the temperature never rose above 102 2-5°. The dressings were renewed every four days, and he left the hospital at the end of forty-five days with about one-sixth of an inch shortening.

CASE IV.—Patrick M., aged 22 years, a brakeman, while coupling cars had his right hand crushed between the "bumpers." He was admitted to the hospital early on the morning of August 15. The hand was amputated just above the wrist-joint under the usual antiseptic precautions. The temperature never rose above 100 2-5°, and the dressings were renewed every six days. The patient was discharged cured in about seven weeks.

CASE V.—George M., a butcher by trade, after traveling around from hospital to hospital, was finally admitted to our surgical ward August 8. He said he had injured his foot some months previously and it had been growing steadily worse. The foot and ankle were very much swollen and inflamed. On either side of the ankle several large suppurating sinuses discharged pus freely, and through these openings the probe could readily detect necrosed bone.

As his general condition was very much below par, operative interference was postponed. He was kept quiet in bed, tonics were administered and the foot wrapped in a wet bichloride dressing. From this time he improved steadily, and the inflammation around the ankle subsided.

A careful examination of the affected part, under ether, showed such extensive disease of the ankle that it was deemed impossible to save the foot. The tarsal bones were so far necrosed as to crumble away under the gentle use of the curette, while the lower ends of the tibia and fibula, for a distance of two inches, were readily detached from their shafts by simply grasping the denuded portions of bone with the sequestrum forceps. The patient finally gave his consent to the operation, and the leg was amputated at the junction of the lower and middle thirds. Lateral cutaneous flaps were approximated by a continuous silk suture and the usual routine observed.

No complications arose, and the patient was discharged cured in about six weeks after the operation.

CASE VI.—Charles F., aged 18 years, had his hand caught in machinery, causing a very bad crush. He was admitted to the hospital on the morning of August 23, and in a few hours his hand was amputated at the wrist-joint. His temperature never rose above 99 4-5°, and eight days afterward, upon the removal of the dressing, the flaps had united by first intention. His condition continued excellent, and he was discharged cured at the end of twenty-one days.

CASE VII.—John K., aged 25 years, was brought to the hospital September 3, having had his left hand, forearm and arm badly crushed in a cutting machine. He was very severely shocked and had lost a great deal of blood. After waiting two hours, during which time stimulants were administered, with slight attempt at reaction, Dr. Harte concluded to amputate at the shoulder-joint. Soon after the operation the patient developed heart clot and died.

CASE VIII.—John H., 10 years old, having been run over by a freight car, was brought to the hospital September 7, with a crush of the left leg and right foot.

Although he was profoundly shocked on admission, he rallied sufficiently under continuous stimulation for three hours to warrant operative interference. With the administration of as little ether as possible, the right leg was amputated at the upper third and a modified Chopart of the left foot performed. During the night he sank rapidly and died eighteen hours after admission.

CASE IX.—Thomas M., a tramp, 52 years old, while sleeping under a freight car September 10, had his left leg badly crushed. On admission he was profoundly shocked, but rallied sufficiently in three hours to justify amputation at the knee-joint. Twelve hours later the temperature had risen to 104 3-5°, and he soon died in extreme exhaustion.

CASE X.—Alexander F., 39 years old, a weaver by trade, while crossing the railroad was caught by the cowcatcher of a passing train. On admission to the hospital, September 10, it was found that he had sustained a severe scalp wound, a simple fracture of the right

fibula at the lower third, and a crush of the left foot and two fingers of the left hand. Although very weak on admission he rallied promptly under stimulation. It was necessary to amputate the left leg at the juncture of the middle and lower thirds. The index and middle fingers were removed at the metacarpal joint, and the scalp wound was stitched.

As the patient was very low after the operation was completed, hypodermics of brandy, aromatic spirits of ammonia and digitalis were administered alternately every fifteen minutes for two hours. Five grains of carbonate of ammonia were also given every hour until he had reacted. Beef juice, warm, was exhibited at intervals for the first forty-eight hours, and two enemas of turpentine (30 ℥) with the yolk of an egg.

The next day his condition was excellent, and he continued to do well from that time on. Twenty-four hours after the operation his temperature was 102°, the highest point reached. On the seventh day the dressings were removed and the stumps were found doing well. On the twenty-second day the fingers were entirely healed, and on the twenty-seventh all dressings were removed from the leg. It then remained only for the fractured fibula, which had been placed in a fracture box, to unite; subsequently a plaster dressing was applied. He left the hospital at the end of eight weeks.

CASE XI.—Frank W., a brakeman, 23 years of age, while coupling cars had his hand crushed between the drawheads. He was in excellent condition on admission October 11. A wrist-joint amputation was performed with antero-posterior flaps. The temperature rose to 101 2-5° on the third day, and was afterwards normal. The dressings were removed every three days. At the second dressing, owing to some subacute inflammation at the wound, alcohol (one-third), was added to the bichloride solution (1-2000), for moistening the dressings. The patient was discharged at the end of three weeks with the stump entirely healed.

CASE XII.—Joseph B., aged 30 years, while stealing a ride on a freight train had his hand crushed "between the bumpers." On admission to the hospital September 22, he was very much under the influence of liquor, and refused to have any operation performed. The next morning, however, his consent was obtained and the hand amputated at the wrist-joint. The temperature never rose above 100 2-5°, and he was discharged cured in one month.

CASE XIII.—Edward K., aged 52 years, came to the hospital October 18, with a crush of the foot, having been caught by a train while crossing the track. As he positively refused to have his foot amputated the mangled tissues were detached and the leg dressed antiseptically. As the foot began to slough, charcoal poultices (charcoal, ⅓, flaxseed-meal, ⅔), were applied twice a day to hasten the separation of the dead tissue, and the wound was thoroughly washed in hot bichloride solution (1-2000). Meanwhile the temperature never rose above 102°. In about two weeks the sloughs having separated, Dr. Harte performed a Chopart amputation. The wound was dressed in the usual way every four days. The temperature remained normal and his general condition showed marked improvement. The stump is healing kindly and he will soon be ready to leave the hospital.

CASE XIV.—Risney H., aged 23 years, came to the hospital November 21, with a crushed foot which had been run over by a freight car. His condition was fair, and after a couple of hours Dr. Harte performed a Chopart amputation. It is now thirteen days since the operation, and the dressings have not been disturbed, as his temperature has remained normal; there has been no pain in the stump and his general condition has been excellent.

This includes all the amputations performed by Dr. Harte during his recent service at the Episcopal Hospital, except one case which is fully described in the MAGAZINE (see page 187) by Dr. Stavely. This would make fifteen amputations, out of which number three died, and the remainder made a very satisfactory recovery. The careful antisepsis, combined with judicious stimulation and diet, were important factors in obtaining the good results in this series.

WILBUR P. KLAPP, M.D.,
Late Resident Physician, Episcopal Hospital.

EPISCOPAL HOSPITAL.

I.—AVULSION OF LEG, WITH COMPOUND EPIPHYSEAL SEPARATION OF THE CONDYLES OF THE FEMUR REQUIRING AMPUTATION AT THE THIGH.

[Service of RICHARD H. HARTE, M.D.]

Epiphyseal separation of the condyle of the femur is, comparatively and absolutely speaking, a very rare injury. Manquet[1] collected altogether 106 cases of epiphyseal separation, twenty of which were of the condyles of the femur. Dr. John H. Packard[2] says there are nearly fifty cases on record. Hamilton[3] mentions five cases, and says he knows of no others.

The injury can be caused by direct violence, but in the great majority of cases it has been done through hyper-extension of the knee, with twisting of the leg. A strange feature about these accidents is that at least one-half of them have been caused by the victim getting his leg entangled between the spokes of a moving wagon. Others have been caught in the belting or wheels of machinery.

M. Coural reports the case of a boy, aged 11, who, while his leg was firmly caught in a deep hole, was thrown forward, thus causing an epiphyseal separation, with protrusion of the diaphysis through the popliteal space. The separation has also been caused intentionally by orthopædic surgeons in endeavoring to remedy a genu-valgum.

Madame Lachapelle speaks of a case in which traction on a foot during delivery caused a separation of the femoral and also of the tibial epiphysis.

As it requires great force to produce this condition, there is often injury done to the surrounding soft parts. The diaphysis is generally found protruding through a laceration in the popliteal space, while the epiphysis remains *in situ*, or is tilted slightly backward by the action of the gastrocnemius muscle, which is attached by two heads to the epiphysis.

There is considerable thickening and strong attachment of the periosteum at the epiphyseal and diaphyseal junctions, and when this accident occurs the lower part of the diaphysis is extensively denuded of its periosteum. Epiphyseal separation rarely occurs in patients over sixteen years of age.

CASE.—On the afternoon of September 30, William Baroudon, aged 10, in attempting to mount a moving vehicle, slipped and fell, his right leg getting in between the spokes of the wheel. The leg was literally twisted off a little below the knee; the knee-joint was torn open, and the lower extremity of the femur, minus the epiphysis, found protruding through a bad laceration posteriorly about two inches above the joint. The diaphysis was stripped of its periosteum for fully four inches. The epiphysis remained in position, with the exception that it was slightly tilted. The popliteal vessels were not injured, owing to the fact that the femur was obtruded a little to the inner side. On admission his temperature was 98 1-5°, pulse 100, respirations 30; in other words, his condition was excellent.

The leg was thoroughly cleaned antiseptically, wrapped in wet bichloride towels, and covered tightly with a broad rubber bandage to check hemorrhage.

[1] Sur les décollements epiphysaires traumatiques. Thèse de Paris, 1877.
[2] Keating's Cyclopædia of the Diseases of Children. Vol. III.
[3] Fractures and Dislocations. 1875.

Dr. Harte operated at 8 P. M., amputating at the junction of the middle and lower thirds of the thigh (this becoming necessary on account of the stripping of the periosteum), making antero-posterior musculo-cutaneous flaps.

After the operation the temperature was 98 3-5°, pulse 132, respirations 38. He was ordered carbonate of ammonium, gr. iij, every half hour, until he had recovered from the shock of the operation.

October 1, 1890.—Suffering very little; no oozing; sleep disturbed; some pain in stomach, which was relieved by a mustard plaster.

October 4, 1890.—Temperature 101°; some oozing. Painted bandage with iodoform and collodion wherever it was stained with the discharge. For nine days the temperature was below 102°, the highest being 101 4-5°, the lowest 99 2-5°. On the eighth day the leg was dressed, and the wound was perfectly healthy. . On the morning of the tenth day there was an unaccountable rise of temperature, the thermometer registering 104°. The stump was redressed, but there was no evidence of any pus. As there was a slight parting of the flaps, they were strapped with surgeon's plaster. Three days later the temperature dropped to 100°, and there was no further trouble. He was detained a week longer than necessary, on account of a slight oozing from a pinhole opening, and was discharged on October 31, cured.

II.—COMPOUND FRACTURE OF THIGH, WITH THROMBOSIS OF THE FEMORAL ARTERY.

About noon of the 20th of October John Tiolan, while trying to cross a crowded street, was run over by a heavy wagon used for removing dead animals. One-half hour after the accident he was brought to the hospital. His face was pallid, skin dry, pulse rather feeble, with rate of 104, respirations normal, and temperature 99°. On examination, there was noticed a marked shortening and bowing of the right thigh, and on the inside of the thigh, at the junction of the upper and middle thirds, there was a ragged transverse wound about two and one-half inches long. The wound was carefully washed with the bichloride solution, and on probing with the finger the femoral artery could be felt, beating with considerable force, up to the seat of the wound. At that point there was some narrowing of the calibre of the vessel, and below there was the faintest trace of a pulsation, which could be felt as far down as the popliteal space. There was no laceration of the external coat of this artery. Further examination revealed laceration of the rectus and sartorius muscles. The femur was found to be fractured transversely at a point corresponding to the seat of the wound, the upper fragment being tilted outward and a little forward, and the lower slightly backward, there being an overriding of more than two inches.

By extension and counter-extension of the fragments, with manipulation, they were accurately approximated. The right leg had considerably less heat than the left, but was not cold.

A drainage tube was inserted, the wound sewed with silk and dressed antiseptically, extension applied and the leg supported by sandbags. Hot-water bags were placed around the leg, and it was enveloped in raw cotton.

About 5 P. M. an almost imperceptible pulsation in the popliteal space was felt, which was held for eighteen beats, and then lost. The temperature at that time was 99 4-5°, pulse 130. Whiskey could not be retained, so he was given digitalis hypodermically. In the evening he was seen by Dr. Harte and Dr. Deaver. For two reasons it was decided to postpone operation, because the patient had not sufficiently recovered from shock to make surgical interference warrantable, and because if he should recover, there was enough warmth in the leg to furnish a hope of ultimately saving it. He was ordered ammonium carbonate, gr. v, every two hours, whiskey, f℥j, every hour, and warm milk, f℥ij, every two hours. He was very restless. The next morning the temperature was 102 1-5°, and the pulse about 150.

The right leg was becoming cold, and there was a blueish, mottled discoloration, which could be made to disappear on vigorous rubbing. The right foot was rigidly flexed, and the sole was very much arched.

As he became restless and mildly delirious, and had a temperature of 103° in the evening, he was ordered a sedative fever mixture. He had incontinence of urine.

On the 22, his tongue was heavily coated, he passed his urine involuntarily and was decidedly worse. In the afternoon he died.

Post-mortem examination of the femoral artery revealed a clot extending from the constricted part in the wound up to the profunda artery.

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EDITORIAL.

THE TREATMENT OF MALIGNANT GROWTHS OF THE THIGH BY HIP-JOINT AMPUTATION.

ALTHOUGH it is universally recognized that a local operation upon sarcoma or carcinoma never assures against recidivity, it is generally believed that if the knife were carried wide of the disease recurrence would not take place. Hence, in carcinoma of the breast it is commonly deemed best to thoroughly clean out the axilla, and many operators think that their duty is not accomplished till the sub-clavicular glands are extirpated. So in malignant disease of the extremities, and particularly in sarcoma, it is frequently recommended that a high amputation should take the place of excision. Surgeons who advise this procedure not only look upon the ultimate prognosis with hopeful eyes, but assure their patients that if a major operation is consented to all danger of a return of disease is averted.

This subject has been studied recently by Borck (*Deutsch. med. Zeit.*, November 24th, 1890). In nine cases a hip-joint amputation was performed for the relief of a malignant growth of the thigh. The subsequent history of these cases was followed carefully. One died as a result of the operation. Seven subsequently perished from a renewed outbreak of the original trouble. But one cure could be attributed to hip-joint amputation.

Further, Borck collected 111 cases from medical literature. Of these twenty-three died from the operation. There remain thirty-six of whom definite knowledge as to the subsequent history could be obtained, of whom twenty-six perished from metastasis. Six more died from consumption or other disorder frequently associated with malignant growth. Of the remaining four two suffer from tumors, though in one instance two and a-half years have elapsed since the operation; in the other thirteen years.

Borck concludes, as a result of his studies, that among eighty-seven cases of hip-joint amputation for malignant growth of the thigh, the full histories of whom could be obtained, there is not a single instance of assured permanent cure.

Evidence as to the causal relation of micro-organisms to malignant growths is steadily accumulating, in spite of Kleb's powerful arguments in contradiction of this theory. The coccidia of molluscum contagiosum, described by Pfeiffer and Neisser; of epithelioma, described by Melassez; of Paget's disease, all tend to prove that the protozoa exercise a powerful influence in the etiology of the disease.

At first glance, the evidence of absolute failure to prevent recurrence, even by amputation of an entire limb, would seem to negative the theory that malignant disease is caused by a local irritation. It would, rather, seem to be the result of constitutional idiosyncrasy or a general blood infection.

In some respects cancer is comparable to the primary sore of syphilis. An excision is no guarantee against outbreaks of the disease in other parts of the body, yet excisions have been followed by apparently permanent cures, and, as in the case of syphilis, at times spontaneous resolution takes place.

It is seriously questioned by some surgeons as to whether operation is ever justifiable in the graver forms of carcinoma. In some cases, at least, the malignant process is directly hastened thereby, while in the vast majority the disease steadily advances to its fatal termination. Against this can be urged the well-attested fact that thorough removal of all obviously infected areas distinctly prolongs life, that there are unquestionable cases of cure following operation, and that the great majority of patients would prefer death as it is ushered in by visceral complications to that made dreadful to all around by a sloughing hemorrhagic mass of ulcerations.

Borck's paper should be particularly valuable in tending to contravert a professional fallacy which has many times led the surgeon to the choice of an operation directly threatening to life, when one far more safe offers practically the same slight chance of ultimate recovery.

ASTIGMATIC AMBLYOPIA.

Possession of the perfect faculty of seeing depends upon the influence of light. Fish dwelling in the deep pools of caves into which the light does not penetrate, and those which swim in the sea at a depth of more than 9000 feet, are blind. Cecity is the portion of creatures from whom the light has always absolutely been excluded, and is associated with atrophy of the sensory-nervous apparatus and of the entire organ. The least penetration of luminous rays secures the eye from complete loss of visual acuity, but every impediment in the path of these rays leads to an amblyopia directly proportional to the density and persistence of the mechanical obstruction, provided the obstacle has exerted its influence in the extreme youth of the subject. Thus, a non-congenital cataract may exist for many years without causing in the eye loss of sensory power, but when the lens is cataractous at birth its prompt removal should be accomplished to prevent great weakness of the retinal percipiency. More than this, not only should the eye during infancy be in the condition to receive free access to the rays of light, but it must exercise its functions. An eye affected with strabismus loses power by virtue of its constant wandering from the parallelism of the visual axes, and possesses a degree of amblyopia which, indeed, has probably preceded and caused the deviation, but which is increased by the lack of exercise it imposes upon the retina. This, in its turn, may subside under the influence of a tenotomy resulting in perfect correction. Having stated these conditions as essential to the development of retinal sensibility, George Martin (*Archives de Physiologie*, Nr. 4, October, 1890) insists upon the fulfillment of another condition before the eye can obtain perfect vision, viz.: that at the time of the education of the sense of sight all the rays which concur in the formation of the images shall converge exactly upon the retina in a single focus. Hence the presence of astigmatism introduces an obstacle to the perfect reproduction of exterior objects, and causes diffusion of certain parts of the retinal image. In order to demonstrate the astigmatic phenomena upon which his research is based, Martin deems it necessary to employ the plate which Snellen has attached to his optotypes, and which he describes as follows:

"In this plate the black lines, which are about 30 centimetres long, present a thickness of 7 millimetres at the periphery and a little less than 2 millimetres toward the centre. These lines are placed radially around a central point, and are in groups of three. The median line of a group is separated from the two others by a white space, whose thickness in a given point is always equal to that of the lines corresponding. Finally, a group, at its large extremity, is separated from the next group 35 millimetres, and at the small extremity 8 millimetres. The whole has been so calculated that the axis of a group is distant ten degrees from the axis of those lying nearest. With the assistance of this plate one is enlightened concerning the presence of astigmatism, and at the same time the degree of acuity proper to each meridian. If the three lines of a group are distinct only at their large extremity, the acuity will be only

2-7; if they are seen distinctly as far as 1-3, 2-3, 5-6, 6-6 of their length, the acuity will be equal to 2-5, 1-2, 2-3 and 1-1, for the reason that at the places indicated the dimension of the lines and their separation correspond to the thickness of the various letters which, in the optotypes, serve to measure the said acuities. The astigmatic correction will be considered complete when, in the various groups, the three lines will be seen in an even way; that is, when they shall present the same extension with the same color and clearness."

If an astigmatic patient is placed before a dial of this description, notwithstanding the use of the best cylinders and the adjustment of the most accurate correction it is not always possible to establish a perfect harmony in the color of the lines of the radiated dial, or to make the three lines of each group appear with the same clearness in an equal extent—a fact which has often been noticed, although Martin believes it is not generally known. For instance, an individual having in his right eye a myopia of 4 D, and an astigmatism of 1 D, received a sphero-cylindrical glass, which secured for him normal visual acuity and uniformity in the lines of Snellen's chart. In the left eye the myopia was 1 D and the astigmatism 2 D, but the correcting lens gave him only 1-2 of normal vision, and while the three lines of the vertical group were seen almost in their entire length, those of the horizontal group were distinct only in their first two-thirds, while in the other third the lines appeared united into one of a uniform grayish hue. In other words, the visual trouble was almost nothing in the principal meridian, but extended over one-third of the perpendicular meridian, presenting here an acuity of 1-2, while in the former it was nearly 1, or a difference in the meridians of nearly 1-2. Martin has observed these differences to be far from rare, and in an experience of several months has found more than a hundred cases in which it was impossible to exactly correct the asymmetry of the meridians.

In searching for an explanation of these facts, the author first turned to irregular astigmatism, which was excluded by finding that the principal meridian crossed at right angles, and that there were no films on the cornea, no spots in the lens and no lesions in the eye grounds. Inasmuch as the same degree of astigmatism in one case, after correction, presented acuity similar in all meridians, while in another, other things being equal, yielded a notable deviation on the part of the principal meridians, the phenomena could not be ascribed to the ellipsoidal form of the cornea or to spherical aberration. Any defect from refraction was excluded, because Martin believes that by a skillful manipulation of the ophthalmometer and the use of cylindrical lenses, it is always possible to give to a meridian the quantity of refraction which it lacks. He was hence driven to the conclusion that he had to deal with a functional disease of the retina, namely, a partial anæsthesia. Having accepted this idea, which depends upon the conception that the retinal elements were provided with a sensibility greater in one direction than in another, the argument continues:

Good sight in adult age depends upon the perfect education of the retina in infancy at the moment of the functional development of the senses, a condi-

tion unattainable if, for any reason, there is a failure on the part of the retina to receive homocentric images. The possession by the retinal elements of equal sensibility requires their equal excitation by light in all directions. The presence of astigmatism interferes with this equal excitation, because the rays of light in one meridian are united at the focus, while in the other they are replaced by circles of diffusion. Hence the retinal elements acquire a greater degree of sensibility in one meridian than in the other. These facts being true, it follows that a retina constituted of elements which have thus been educated will receive asymmetrical perceptions, and although the astigmatism is corrected, equal vision cannot be established; the asymmetry of refraction will be neutralized, but an asymmetry of acuity will remain, depending upon disturbance of the inmost functions of the rods and cones of the retina. Astigmatic amblyopia, then, exists in two forms: either as a visual trouble presenting itself with the same intensity in the various meridians, or existing in only one direction. The difference in the acuity found on the part of the two principal meridians after the astigmatism is corrected indicates the degree of amblyopia depending upon the asymmetry. There remains to be explained the fact that such phenomena do not exist in all astigmatic cases. This depends, according to the author, upon the spontaneous corrections of astigmatism which partial contractions of the ciliary muscles are able to effect by producing an astigmatism in the crystalline lens in a direction perpendicular to the corneal astigmatism. If during infancy the subject is in perfect health, and the ciliary muscle possesses its maximum power, this succeeds in correcting the asymmetry, and the elements are equally stimulated in all directions, and there will be no trace of astigmatic amblyopia. If, on the other hand, the subject is sickly and the ciliary muscle of imperfect power, there will be unequal excitation of the elements by the luminous rays, followed by asymmetrical sensibility, which will be greater just as the degree of correction has been less. If all of these facts are true, it stands to reason that while the direct proof of the production of amblyopia by the presence of a mechanical obstacle—as, for instance, a congenital cataract—has not been given, indirect proof of this pathogenesis is furnished by the phenomena of astigmatic amblyopia. If the theory of astigmatic amblyopia is correct, and if it is true that the retina, to acquire its maximum sensibility, must receive, through a perfectly refracting dioptric apparatus, exact images of the exterior objects, and if the least imperfection in this apparatus during the first moments of life redounds on the functions of the retina, and prevents its acquirement of perfect sensibility, it would be easy to speculate that, in a modified sense, the same imperfection of environment might bring about similar imperfections in the other special senses.

This research opens an inviting field for speculation and experimentation to determine the exact conditions which govern the development, in its most perfect form, of other types of highly specialized nervous mechanisms.

SOCIETY PROCEEDINGS.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, November 24th, 1890.

A PLEA FOR THE EMPLOYMENT OF PARTLY DISABLED PERSONS, ESPECIALLY EPILEPTICS.

By J. Madison Taylor, M.D.

Gentlemen: I desire to obtain your thoughtful consideration of a subject which must commend itself to your hearts and possibly gain your active support. I hope that what I say, and it shall be briefly said, will find its way to the public and command the ears of those who have both the will and the means to aid their less favored fellows.

There is always among us a class of willing, ofttimes most capable people, with certain definite limitations, who yet cannot get self-sustaining employment because of a partial disablement. When this is the result of maiming, as by the loss of a limb or an eye, it is graphically displayed, gets ready sympathy, and for such folk provision is frequently made. But when it is the result of disorders of the nervous system, as epilepsy, or locomotor ataxia, or the various partial palsies, I know of none in this country.

In Europe there are some noble institutions devoted to this purpose, as the great Bethel Epileptic Colony at Bielfald, near Hanover, in Germany, begun in 1865. Since its establishment several similar ones have been successfully started in various parts of the German Empire and neighboring States.[1]

It is upon this aspect of this matter I claim your attention to-night. In the future and elsewhere I hope to speak of that great army of willing workers, half-disabled and heavily handicapped by disorders of the lungs.

Hence the pitiful spectacle is too often exhibited of an intelligent, skillful man having assumed the responsibilities of a wife and family in the plentitude of power struck down upon his knees by the ruthless destroyer tubercle, yet fighting bravely on, rapidly limiting his already shortened span of life by overwork. He keeps on the full working hours each day or loses his job. Were he able to work now at half speed and under improved surroundings, the term of service of this useful citizen might be indefinitely prolonged. His own life might then be spared and his family enabled to adjust themselves to their changing conditions.

But to return to the epileptic. The sufferer is not especially set apart from his fellows in childhood or early youth, nor if in comfortable circumstances, but the moment he applies for work and his malady becomes known, at once a sharp line is drawn. Be he ever so intelligent or industrious this constantly stands like a black mark against his name. His presence is only tolerated. He is got rid of at the earliest possible moment, and the difficulty of getting other work increases in a geometrical ratio till presently he is relegated to the lumber heap of incompetents, or becomes a hopeless pauper. Every physician, nearly every observant person, will be able to recall instances of this sad history. The only wonder is that so little stir have these patient victims made by their persistent yet silent appeals. Strange, truly, are the tastes of philanthropists who provide only for those seriously diseased in hospitals, or worthless ones in homes

[1] See Journal Nervous and Mental Diseases, December, 1889, article by Dr. Peterson.

of idleness. I think it is beyond peradventure that the greatest charity is fit opportunity for wholesome fairly-paid work. Also, the chief factor in maintaining self-respect is adding to the world's work to the measure of one's power.

The Giant Labor is to-day confronting the Giant Capital on the world's stage more threateningly than it has been ever known to do. The Giant Labor has his tyrannous moods, and says that a man shall get, according to his trade classification, just so much wage for so many hours work. Small allowance is made for his fitness to earn this fee. That he puts his hand to the work at all, be it slackly or eagerly, and uses up the specified number of hours, the full rate is to be his. Hence arose the need to stop capital from selecting only the better men. The unions dictate who shall be chosen. In such a contest only the strongest or the cleverest may win. Those who have even occasional maladies are kept out of the ranks of working men. Again, if an employer be merciful and desires to give an epileptic a job, especially if this be among machinery, and if in a fit this poor creature falls and hurts himself, the law gives him the right to sue for damages, and, unjust as this may appear, it is often done. Even in the ranks of domestic labor a female servant cannot be tolerated long who falls ever so rarely in a loathsome-looking fit.

Thus one way or another the door to honest labor is shut. Add to these constant disappointments the highly emotional nature so often a part of the disease before and after the fit, the inevitable mental and moral weakening which the disease breeds, and the sufferer may well be looked upon, as by the ancients, a victim of the especial and fiercely directed anger of the gods.

Could there be had a wisely devised series of havens for such where the worst cases might be housed, and others received daily, and all employed in proportion to their powers, it would constitute a worthy charity. Charity should be clearly distinguished from almsgiving. The great petition which goes up from humanity is for opportunity. Those who have good brains must choose and plan for those who are lacking, Such a system would offer immeasurable opportunities for the study, relief and cure of the dread "falling sickness."

The first desideratum in the treatment is to learn the precise phenomena of the fit; whether it gives evidence of being from a definitely localized area or general; whether from permanent changes, or such as may be cured by medicines, or by surgical interference. The close study of a large number of cases by competent observers would result in invaluable generalizations. It has been abundantly proven in the European colonies that out-door labor is of greatest value as an aid to other measures. The surgery of the brain has opened an almost limitless possibility in this disease. While some results, so far are disappointing, if only closer studies be made, these may exceed even our now most extravagant expectations.

One point on which I touch last, should demand our gravest attention, viz.: the standing menace which a person subject to regularly recurring transient periods of complete insanity exerts while enjoying full liberty in our streets and homes. True, there does not often occur among epileptics notable instances of murder or incendiarism, yet it is perfctly well known that during the pre-paroxysmal stage he is fully capable of doing much harm, either physical or mental. If not the overt act, yet the ofttimes more serious harm of suspicious misrepresentation. This done, too, by one who enjoys the reputation for perfect sanity. A purely idle, irregularly truthful person is bad enough in any community, but when there is added to this the uncontrollable impulses of a mind subject to sudden delusions, his power for harm is incalculable.

BOOK NOTICES.

A Manual of Modern Surgery. By John B. Roberts, A.M., M.D. Philadelphia: Lea Brothers & Co., 1890.

Dr. Roberts is widely known as a surgeon thoroughly versed in his profession, as an original thinker, as a clear, entertaining teacher, and as one particularly gifted with a facile pen. Hence his book has been looked for with more than ordinary interest. To present any branch of the medical profession as it is to-day requires access to libraries and large collections of journals, and, consequently, a thorough knowledge of current scientific literature such as few possess. To condense the knowledge thus obtained in the comparatively narrow limits embraced in the book under discussion is a task far more difficult than the preparation of an elaborate treatise. In many respects the author has shown himself especially fitted for this work.

To the student in medicine particularly this Surgery will prove most valuable, since he will here find points in pathology, in diagnosis, in operative technique not yet embodied in the larger works which are commonly recommended to him as text-books. The style of the book is singularly clear and direct, and the discarding of confusing, meaningless nomenclature is certainly a distinct advance. Thus, on turning to aneurism, it is a satisfaction to find the titles of aneurismal varix, varicose aneurism, diffuse traumatic aneurism, circumscribed traumatic aneurism, etc., replaced by names which in themselves describe the pathological conditions, and, hence which require no effort of memory other than that needed to bear in mind the abnormal condition.

The carping critic could, of course, take exception to the omission of many points which are commonly conceded to be of major importance in surgical practice. Here, however, must be considered the fact that the writer could not include everything, and that his judgment in regard to what is of chief value is generally better than that of the individual reviewer. Even with this granted, we do not understand why there is not even a mention of certain modern methods, as, for instance, Kocher's manipulation for shoulder-joint luxation. This, we had thought, was a common teaching at the present day. Again, even in a manual of surgery it would seem wise to devote some space to a consideration of palmar abscess and operations upon the hand.

In the genito-urinary section we fail to notice evidences of familiarity with the brilliant work of recent German and French writers in this specialty.

Having occasion to look for hypospadia, no reference could be found in the index. By search through the pages of the book the titles "epispadius" and "epispadias" were found heading a very meagre description.

To define varicocele as "a varicosity" is, to the student at least, not entirely satisfactory, and the further statement that ligation of the veins *en masse* "invariably gives immediate and permanent relief" would lead the reader to a confidence in this method not generally entertained.

Certainly, no surgery has yet appeared which was not open to some adverse criticism. The few points taken at random, above noted, are as nothing compared to the intrinsic merits of the work before us. It is a book of distinct value, and will, we trust, give a powerful impetus to the onward and upward course of American surgery.

DICTIONARY OF PRACTICAL MEDICINE. By VARIOUS WRITERS. Edited by JAMES KINGSTON FOWLER, M.A., M.D. Philadelphia: P. Blakiston, Son & Co., 1890.

This work is dated July, 1890, presents an imposing array of contributors, and is supposed to be very much up to date. It is a dictionary of medicine, alphabetically arranged under the names of diseases. In looking over it the omissions strike one as curious. At the time the reviewer took up the book he happened to be interested in a case of crural monoplegia, and he opened it at the point where this subject should have been found; neither under "crural" nor under "monoplegia," nor under "paralysis," was there any reference to it. This induced a search for similar omissions. Hemiplegia is mentioned; monoplegia is not. The only disease with the prefix *mono* which is mentioned is monomania, and under "paralysis" only two forms are deemed worthy of consideration—acute ascending (Landry's), and paralysis agitans. If there are any other articles on this subject in this book they are not in the index, nor has a tolerably close search revealed them. Of course, in a work of 900 small pages, a very full account of the different varieties of diseases cannot be given, but there seem to be some important omissions. Some unimportant subjects are treated at great length, and those of more moment very briefly. Nearly two pages are given to "xanthoma," and one page to "yawning." Yellow fever is disposed of in the same space as is given to the latter important subject. In some respects the articles are to date. Hypnotism has found its way into the book, and is treated in a sensible, conservative manner, but without undue skepticism, by Dr. A. T. Myers. Hardly enough is said about the methods of inducing the hypnotic state, or about the serious nervous results which so often follow its application and constitute one of the great dangers of its use in unskilled hands.

There is a good short article on acromegaly, by Dr. W. B. Hadden, who, however, gives up the treatment as a bad job in the following three lines: "The treatment is to be conducted on general principles. Massage is favorably mentioned by one observer." The articles on the subjects which the English have made their own, like gout, are particularly good and full, and those upon skin diseases, which are almost all by Dr. J. J. Pringle, are specially good, although perhaps undue space is given to a number of the rarer minor skin troubles. Perhaps, however, the book is better than one has any right to expect, seeing that it is called a "practical" work, a word which applied to manuals and dictionaries to-day, leads one to await what is generally found, that where they succeed in being practical they are unscientific, and where they are scientific they are not practical.

THE LATIN GRAMMAR OF PHARMACY AND MEDICINE. By D. H. ROBINSON, PH.D., and L. E. SAYRE, PH.G. Philadelphia: P. Blakiston, Son & Co. 1890.

To the pharmacist, even more than to the physician, a knowledge of the fundamental language upon which is built, as a superstructure, the peculiar terminology and phraseology of his calling, would seem an acquirement of extreme value. This Latin Grammar, which is probably as large and elaborate a work as the ordinary student, hard worked as he already is, would care to add to his burden of text to be acquired, is arranged, to some extent, in pursuance of the plan of Collar and Daniell's "Beginner's Latin Book," and contains several interesting and valuable features, notably, in addition to the ordinary exercises for translation usually to be found in Latin works for beginners, there are further exercises, consisting of series of questions propounded in Latin, to be answered in the same language, thus combining the good qualities

of translation and prose composition, both so valuable for the thorough acquisition of an unknown tongue. The "Suggestive Derivations," also, are a commendable feature of the work—the analysis, in a rough way, of various familiar compound words, whose roots, prefixes, affixes, etc., are frequently to be met with in the etymological consideration of technical terms.

The faults of the book are chiefly those inevitable to the attempt to treat a subject of such magnitude in a space so circumscribed. For the acquirement of a thorough familiarity with a before totally unknown language, an extensive course of reading—one much more elaborate than is here afforded in all the exercises—is to the ordinary student a "*sine qua non*."

The vocabulary is especially adapted to the requirements of the student of pharmacy. The medical student will find it useful and appropriate so far as learning how to correctly write his Latin prescriptions is concerned, but for all the other branches of his professional education—anatomy, physiology, pathology, etc.—it will be to him of little or no value. The knowledge of Latin grammar which will be afforded him, however, will be found useful in one branch as well as in another.

Hygiene and Public Health. By Louis C. Parkes, M.D., D.P.H. Second Edition. Philadelphia: P. Blakiston, Son & Co., 1890.

The fact that the first edition of this work was exhausted within six months of its issue is proof that the author was not far amiss in believing that some text-book of this kind on hygiene was needed, and would be favorably received by those interested in sanitary science.

While the author has followed rather closely the classification and method of treatment adopted by his relative, the late Professor Edmund A. Parkes, in his "Manual of Practical Hygiene," which most of us have come to look upon as authority, he has added considerable matter that is new, and what is old is well selected and condensed.

The style is good; dry facts, laws and statistics are put in such a way that the reader does not tire of them, and yet finds them easy to remember. In fact, Dr. Parkes seems to have accomplished his aim of making the work as practical as it could possibly be within the limits of space to which he was restricted. At first sight it seemed to us that too much space had been given to the chapter on the "Disposal of Refuse," and we are not quite sure that we are now free from that opinion; but the author's points, that defects in drainage are frequent and important, though often insidious, factors in the causation of disease, and that it is necessary that practitioners have a thorough knowledge of this branch of the science, are well taken.

The chapter on "The Contagia and the Communicable Diseases and their Prevention," gives a fair practical idea of what is now accepted as definite regarding the rôle of pathogenic bacteria in contagious and infectious diseases, and brings the book in that respect, as in others, up to date. The chapter on "Statistics" is good, and will be of advantage to those who have work of that nature to do, but have become rusty in their mathematics. Under this heading, as well as in other parts of the volume, a number of examples and illustrations are given, making clear the laws and principles, and rendering more certain, the proper results from given data.

One caution to be observed by the American reader is that the figures given regarding the proper temperature and humidity of the air of dwellings must be modified for this country, owing to the difference in climate. Experience shows that the temperature given as sufficient for indoor heating, 60° to 65° F., is too

low for comfort here; while, on the other hand, the degree of humidity given, 75 per cent. is too high for us who are accustomed to this drier climate of ours.

Advantage has been taken in this second edition of the opportunity for eliminating the errors of the first issue and for making some slight additions where they were thought desirable. The book is well printed from clear type, and the illustrations are excellent and well selected. All in all, the volume is well worth reading by those who wish to keep in touch with the latest advances in sanitary science and preventive medicine.

A Treatise on the Diseases of Infancy and Childhood. By J. Lewis Smith, M.D. Seventh Edition. Thoroughly Revised. Philadelphia: Lea Brothers & Co., 1890.

This book is not free from fault in all details, but on the whole is judicious in its teaching and lucid in its style, while it certainly exhibits erudition and experience. It is not a book which, like Meigs and Pepper, for example, may serve a student of limited means for his sole text-book and book of reference on its topics, but it is one which will prove an addition to a well-selected library, and may on occasion be usefully consulted.

The section upon diphtheria is particularly valuable. The author lauds the internal use of the corrosive chloride of mercury, though he cautions against the excessive doses sometimes administered. For a child of two years he would not give more than one-sixth of a grain in twenty-four hours; for a child of ten years not more than half a grain in the same period. Of solvents for local use he prefers a mixture of oil of eucalyptus, benzoate of sodium, bicarbonate of sodium, glycerine and limewater, to which trypsin may be added if necessary.

The section upon intubation is written by Dr. O'Dwyer, and is therefore authoritative.

The section upon tracheotomy is extremely unsatisfactory, being too condensed to give an adequate idea either of the operation or of the after-treatment.

In the section upon tuberculous meningitis the importance of early diagnosis is properly insisted upon, but little told us which will help to decide matters. Scarlatina is exhaustively and ably discussed.

The section upon typhoid fever is a good one, though we are sorry to see a recommendation made of the use of antipyrine.

One of the most important chapters in books on diseases of children at the present day is that upon artificial feeding. While in this work the subject is very elaborately considered, still the result is unsatisfactory, for the reason that here, as in many other sections, while there is much quotation and allusion to the work and opinion of others, the reader does not take away a clear and definite understanding of what the author himself considers best.

MISCELLANEOUS.

DEATH OF DR. SAMUEL LEWIS.

Dr Samuel Lewis died on the 26th day of November, at the country residence of his relative, Mr. W. G. Thomas, near Bryn Mawr, Pa., aged 77 years and 10 days. Dr. Lewis was born in the island of Barbados, W. I., on November 16, 1813, and came to this city with his guardian, Rev. W. P. Hinds, in his 21st year. He began the study of medicine at the University of Pennsylvania in the fall of 1834, but after attending one course of lectures went to Edinburgh, where he took the degree of Doctor of Medicine in 1840, having also been admitted as a member of the Royal College of Surgeons of England during the previous year. After his return to Philadelphia he engaged for a few years in the practice of his profession, but for a long while before his death gave all his energies to promoting the interests of the College of Physicians of this city, of which he had become a Fellow in 1849. In 1864 he presented his private library, numbering over 2500 volumes, to the College, and thenceforward, year by year, increased his donation, until now the "Lewis Library," as it is called in his honor, contains more than 10,000 volumes, many of them being of extreme value, and all in excellent condition. Dr. Lewis was for very many years an active member of the Library Committee of the College, serving also for some time on its Publication Committee, and as one of its Censors; and in 1884 was elected president, resigning this position, however, after four months on account of impaired health. For some years before his death Dr. Lewis had suffered from valvular disease of the heart, and this led ultimately to extreme passive congestion of the lungs, the latter condition being the immediate cause of the fatal issue.

The usefulness and value of the Lewis Library to the whole medical profession of Philadelphia cannot be overestimated; but only those who have been familiar with the history of the College can appreciate how much it has owed to Dr. Lewis' personal labor in its behalf, and to the high tone and honorable spirit which he uniformly manifested in every relation of life. A genial, courteous gentleman, an accurate and accomplished scholar, a true and loyal friend, a liberal and generous benefactor, a devout and faithful Christian, the place which he adorned in the profession and community of our city never can be filled; but the memory of his lovely, gentle life, and the example of his good deeds, will long remain for the encouragement of those who come after him.

The funeral services were held in the church of St. James the Less, on December 1, and the interment took place in the adjoining cemetery.

IN MEMORY OF RICHARD J. LEVIS.

At a meeting of the Faculty of the Philadelphia Polyclinic and College for Graduates in Medicine, the following preamble and resolutions were unanimously adopted :

Whereas, The Divine Ruler of the Universe has seen fit to remove from among us Dr. Richard J. Levis, our friend and colleague ; therefore, be it

Resolved, That in the Emeritus Professor of Surgery of the Philadelphia Polyclinic not only we, but the whole medical profession, have lost an honored and faithful colaborer ; and the community have cause to mourn a skilful and learned physician, an honest and sympathizing friend.

Resolved, That by his kindness of manner, by the thoughtful interest which he always manifested in the younger members of the profession, by his encouragement, his earnestness, and his example, he had endeared himself to all, and that if we would fitly honor and cherish his memory we must emulate his zeal, and vie with each other in carrying forward the great work in which he was so ardently engaged.

Resolved, That we tender to his family, in this sad hour of affliction, our heartfelt sympathy.

Resolved, That these resolutions be handed to the family of our beloved colleague, and to the medical journals.

Thomas J. Mays, *President.*
S. Solis-Cohen, *Secretary.*

MARYLAND MEDICAL JOURNAL.

The proprietors of the *Maryland Medical Journal* announce to its patrons and the medical public at large, that after January 1, 1891, the editorial management of the publication will be under the control of Prof. J. Edwin Michael, M.A., M.D.

The journal will aim to reflect the medical work and thought of the day, with special reference to what is going on in Baltimore. Its matter will consist of clinical lectures, as delivered in the hospitals of this and other cities, original papers, hospital reports, abstracts from home and foreign medical literature, local and general medical news, correspondence, and editorial discussion of interesting medical subjects. Particular attention will also be paid to reviews and notices of books and pamphlets received.

THE NEW BUILDINGS FOR THE PHILADELPHIA POLYCLINIC AND COLLEGE FOR GRADUATES IN MEDICINE.

THE special features of this new structure are: First, that it has been built to meet the requirements of combining in one institution all of the peculiar advantages to be derived from those hospitals which are devoted to the treatment of a single class of diseases, known as special hospitals. Second, the building is arranged to facilitate carrying out the essential character of practical teaching, in which pupils who are practitioners of medicine may be brought in classes, which are always limited in number, into direct contact with the patients.

The last annual report, 1889, states that 25,453 poor patients have been treated in the twelve special departments since the opening of the institution in 1883. During the year 1889, there were 4,607 new cases from twenty-eight counties of Pennsylvania and twelve neighboring states. There were 18,006 return visits of old cases, making a total of 22,613 visits of patients.

The building is constructed of brick and terra cotta, with a frontage on Lombard Street of ninety-six feet. The depth of the lot, extending to Naudain Street, is 143 feet. The system of heating is by indirect radiation. Encased steam coils are placed in the cellar, and there heat the pure air brought in by conduits. Other conduits conduct the heated air to the rooms and hallways.

Ventilation is accomplished by substratum suction. The exit registers are placed in the walls near the floors, and in proper relation to the position of the hot-air registers. The impure air is carried down to the air-tight ducts under the cellar floor, and passes out above the roof through the high brick stack. In the centre of this stack is a cast-iron pipe, through which passes the gaseous products of combustion from the engine room. The constant heat in this iron pipe maintains an upward current of air around it inside of the brick stack. This system is arranged to permit the addition, at trifling expense, of an electrical or steam blower, should this be found necessary.

All the corners in the building are rounded, to prevent the accumulation of dust, and to facilitate thorough cleansing.

The elevator shaft, iron stairs, and all toilet rooms are placed in a practically detached building, which greatly enhances the sanitary condition.

City gas has been introduced throughout, but it is contemplated introducing an isolated electric light plant as soon as available funds can be obtained. The importance of having electric light in a sanitary hospital cannot be overestimated. Its use does not vitiate the atmosphere, and gives a better light, without heat.

The future success of this institution, which is the only one of its kind in this State, depends entirely upon the financial support given to it by generous-hearted citizens, who with charity combine a just pride in maintaining the reputation of Philadelphia as a medical centre. It is a matter of experience that charitable and educational institutions are successful in proportion to their endowments; none are self-supporting.

The Philadelphia Polyclinic Hospital has, during the eight years of its existence, provided gratuitous treatment to 29,953 sick poor in its twelve special departments. But this really is the least part of its far-reaching charity. The practitioners of medicine, who have availed themselves of the peculiar opportunities for scientific research, are putting into practical operation among their own patients the increased skill they have acquired, and thereby benefit not only the distant poor but the rich as well. The higher medical education of the physician affects the entire community, each and all being subject to illness and accident, each and all desiring above all things a speedy recovery of health. This is materially aided by the Philadelphia Polyclinic, which is the only post-graduate medical college and hospital in this State.

The endowment of scholarships will permit the awarding of the facilities of the Polyclinic to deserving physicians of limited means, as for example, medical missionaries, or the extending similar privileges to the medical staff of the army and navy. The endowment of departments will provide the elaborate and often expensive apparatus required by all. The endowment of free beds increases the charitable work.

The following free beds are perpetually endowed on the progressive endowment plan :

The Dr. R. J. Levis Testimonial Free Bed.
The Isaac B. Thorn Memorial Free Bed.
The Ladies' Aid Society's Free Bed for Cripples.
The H. H. Houston Free Bed.
The Endowed Room of the Nurses' Beneficial Association of Philadelphia.

SUPPLEMENT.

THE WORK OF THE COMMISSION APPOINTED BY THE UNIVERSITY TO INVESTIGATE THE ACTION OF KOCH'S REMEDY.

SINCE the 13th of December, when a quantity of Koch's remedy was received by the University Tuberculosis Commission, eleven patients have received injections. Of these, eight were medical cases, all suffering from beginning pulmonary consumption. Three were surgical cases ; one exhibited the symptoms of tubercular osteitis involving the lower portion of the left femur ; one, a child, with distinct family history of consumption, had exhibited for many months the subjective symptoms of tubercular adenitis in the cervical region ; the third had been twice subject to operation for the removal of the entire chain of lymphatic glands of the left side of the neck.

Since several days were spent in carefully studying the condition of each patient, the number of injections given to each is necessarily so small that no

general conclusions can yet be drawn. It would seem well, however, at this stage to state that the lines of research indicated in the Special Bulletin of the UNIVERSITY MEDICAL MAGAZINE are being strictly followed, nor would it seem out of place to briefly indicate the course of one of the surgical cases.

CASE II, a housewife, aged 25, gives a history which does not suggest tuberculosis in the family, except from the facts that her mother died of "brain abscess," and one sister had a chronic swelling of the knee, from which she recovered after operation.

The patient has always been weakly, but has not been seriously ill. During her six years of married life she has never been pregnant.

One year ago she noticed a small lump on the left side of the neck, which, in March of this year, began to grow rapidly. It was removed in April. Three weeks after operation another tumor developed, which was nearly as large as the first. In October of this year the deep chain of glands lying beneath the sterno-cleido-mastoid muscle was removed by Dr. J. William White. The wound promptly closed, but was opened at its upper part some weeks later for the relief of a fluctuating swelling.

On admission to the University Hospital the rather thin, delicate-looking patient exhibited a scar running from the side of the neck, just below the lobe of the ear, to the middle of the outer third of the clavicle. This was the line of incision adopted in the last operation. There was a distinct swelling anterior to its upper third and a brawny induration along the entire line extending to the supra-clavicular region, which was hard and tender. There were several indurated glands in the right supra-clavicular region, and two in the axilla—one as large as a pigeon's egg.

Examination of the lungs showed slight impairment of resonance and harsh breathing in the left apex.

The first injection was given December 17th, at half-past one. Since the patient habitually exhibited a weak and rapid pulse, and had, moreover, shown herself to be exceedingly sensitive to drugs, the minimum dose given to medical patients—namely, .001 c.c.—was administered.

General and Local Symptoms.—Previous observation showed an evening rise in the patient's temperature varying between 100° and 101° F., with a pulse of about 100, and a surface temperature (over the swelling) of about 96.5° F. In an hour and a half after the injection the temperature rose to 102.4° F., the pulse to 102. In four and a half hours the temperature was 102.6° F., the pulse 120. The patient felt tired, and complained of headache and a sense of dizziness. These symptoms slowly declined, till by noon of the following day her condition was much the same as before injection.

There was no distinct local reaction. The patient, however, stated that a very slight cough from which she previously suffered had greatly increased in severity, and was attended with abundant expectoration, and she also thought that the site of operation was more swollen than before the injection.

On December 19th the second injection was made, the dose this time being .002 c.c. At the time of injection her pulse was 92, her body temperature 99.2° F., her surface temperature 96°. In four hours the temperature and pulse were practically the same; her surface temperature had risen to 97.8° F. In six hours the pulse was 98, the general temperature 100.6° F., the local temperature 98.8°. In eight hours the pulse was 120, the temperature 103.6° F., the local temperature 101.2° F. Six hours later the pulse and temperature began to decline till in about thirty hours after injection they had reached the normal line.

The local symptoms were exceedingly well marked. Synchronous with the

constitutional effects of the drug the tumefaction in the left side of the neck began to swell and exhibit all the symptoms of acute inflammation. The entire diseased area became exquisitely tender on manipulation, and the overlying skin exhibited the inflammatory redness characteristic of carbuncle; that is, it was of a distinct dusky hue, and if seen in an ordinary wound would strongly suggest the probability of a sloughing process. The glands on the left side of the neck and in the axilla were apparently but little enlarged and not unduly sensitive. The seat of the last injection was very tender, and about each needle puncture there was a small bright-red areola.

Above each patella there was an irregularly-shaped patch of erythema about the size of a silver dollar and exhibiting many minute, bright-red, acuminate papules. This was noticed by the nurse during the night, the patient having complained of her knees feeling "raw."

As for the subjective symptoms, five hours after injection—that is synchronous with a decided rise in temperature—she complained of chilliness, headache and cold feet. An hour later there were nausea and slight difficulty in breathing. This was followed by giddiness and severe frontal headache, pains in the back and limbs and vomiting. In about thirty hours after the injection all unpleasant effects had disappeared except the cough, which was decidedly more marked.

A third injection was given December 21st, the dose, .002 c.c., being repeated.

Urine.—Previous to inoculation the urine was free from albumin and sugar, the sediment containing amorphous urates and phosphates. After inoculation the urine exhibited the characteristics seen in febrile conditions: increased specific gravity (1014 before, 1028 nineteen hours afterward), slight amount of albumin and abundant urates. The amount passed in twenty-four hours decreased by several ounces after each inoculation.

Blood.—On the day of the inoculation before the operation the following record was made: R. b. c., 4,650,000; w. b. c., 1 : 230; hæmoglobin, 98 per cent. Nineteen hours after the first inoculation the hæmoglobin was 75 per cent., the red blood corpuscles of uniform size and normal in appearance, numbering 5,150,000; the w. b. c 1 : 412. Twenty-three hours after the second injection the hæmoglobin remained at 85 per cent.; r. b. c., 4,850,000; w. b. c., 1 : 120.

Eyes.—There was no change in the reaction of the pupils and no evidence of corneal or conjunctival involvement. The fundus oculi and retinal circulation were negative.

The detailed report of this case, together with sphygmographic tracings and the bacteriological and microscopic reports, will appear in the March number of the MAGAZINE, also the report of the commission upon all the cases subjected to Koch's treatment. This one case has been selected from the number thus far as an example of the action of the lymph upon external tubercular processes. Sufficient time has not yet elapsed to make a comparison of the physical signs of the cases of pulmonary phthisis before and after inoculation. Hence extended description of these is reserved for a future report.

University Hospital, December 21st, 1890.

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ORIGINAL ARTICLES.

NOTES ON CERTAIN PHYSIOLOGICAL ACTIONS OF ATROPINE.

By Edward T. Reichert, M.D.,
Professor of Physiology, University of Pennsylvania.

During the progress of general laboratory work involving the occasional use of atropine, I have at times noted results following its injection which did not seem in accord with statements found in our leading text-books on therapeutics. This naturally led to an inquiry into the literature on the subject, and subsequently to the performance of a sufficient number of experiments to explain satisfactorily these apparent discrepancies. This investigation has been directed chiefly to the actions on the respiration and circulation.

Ever since Norris[1] called the attention of the profession to the physiological antagonism existing between the actions of atropine and opium the use of the former in cases of opium poisoning has grown more and more universal, and has apparently justly gained the confidence of the clinician. At that time our knowledge of the physiological actions of medicines was so imperfect and so limited that it was generally concluded that they were antagonistic in essentially every way, but with the growth of pharmacology it has become apparent that their opposing actions are very few. It is consequently a matter of great interest and importance to determine where to locate the beneficial properties of atropine in these cases, for while there exists some difference of opinion, it is generally conceded that the efficiency is chiefly in a powerful stimulation of

[1] Am. Jour. Med. Sciences, 1862, 44, pp. 395-406.

the respiratory centres. So firmly is this established, that as a guide for its administration in these cases it is recommended to be given in repeated doses until the *respirations* are improved. But while clinical and experimental evidence certainly shows that atropine may in this manner affect the respiratory centres, it is equally manifest that the action is one of much uncertainty and of far less importance than has been attributed to it.

The literature on the subject shows that even after full therapeutic doses the respirations are sometimes unaffected, sometimes increased, and at others diminished, and that even when an increase is observed it is only in exceptional cases that the action is really that of a prompt and powerful respiratory stimulant. In observations on man, Mitchell, Keen and Morehouse,[1] as well as DaCosta, were struck with the fact "that the rate of respiration did not increase as the pulse rate rose. Indeed, in many instances the number fell or remained unaltered, while the pulse ascended from 70 to 120 per minute." The records of cases of atropine and belladonna poisoning are most significant in this respect, chiefly by their silent testimony. The large number of such on record renders a complete review impossible in an article of the scope of the present paper, but a study of twenty-five cases indiscriminately selected from various medical journals shows that it is only in exceptional instances when the individual is thoroughly under the influence of the drug that any decided alterations in the respirations occurred. Of the cases thus reviewed in only three was there noted an increase; in the others it was stated to be natural or regular, or absolutely no mention whatever was made, thus leading us to infer in the last instances that no appreciable change took place. It would therefore seem evident that in nearly 90 per cent. of the cases where the individual was thoroughly under the influence of the poison no noticeable increase in the number, or any special change in the character, of the respirations was observed. When we come to study the effects of atropine and belladonna in cases of opium and morphine poisoning, we occasionally meet with instances where the respirations are immediately improved, and in which it would seem evident that the efficiency of the antidote was to be placed in this; but, on the other hand, it is astonishing, in the face of the asserted action of atropine on the respiratory centres, how many cases there are in which after repeated doses of atropine or belladonna the respirations were not in the least improved, but became worse and worse until other measures were of necessity resorted to for maintaining this function, and with immediately satisfactory results. While it is apparent that atropine and belladonna are invaluable physiological antidotes in opium poisoning, it certainly requires a prodigious stretch of the imagination to attribute the beneficial effects to an action on the respirations in the many cases in which this function continues to fail and in which it is obvious that they were immediately improved and only supported by the battery, or other potent measures.

These clinical and toxicological records certainly render it evident that neither atropine nor belladonna can even be looked upon as a reliable respiratory stimulant much less one which is powerful and prompt.

[1] Amer. Jour. Med. Sciences, 1865, L., pp. 67-76.

Investigations on the lower animals support this view. Harley noted that atropine was unable to affect the respiration rate in the horse. Bezold and Bloebaum[1] in five experiments on normal rabbits record that in two there was a marked increase immediately after giving the drug ; in one a primary marked diminution, the normal not being regained until the lapse of three-quarters of an hour, when a rise ensued above normal ; in another no appreciable change was noted ; and in another there was a very marked diminution, the respiration rate remaining below the normal for nearly two hours, and then followed by a rise. It is obvious that these differences are not to be attributed to dosage, since in three of the experiments the doses were the same, yet the results were vastly different.

The researches of Meuriot[2] on dogs afford remarkably uniform results, he having in every experiment recorded an increase.

In my own experiments Merck's pure atropine, melting point 115° C., was used, it being rendered soluble in water by sufficient sulphuric acid. Dogs are relatively insusceptible to atropine, the fatal dose when injected into the circulation being from 0.02 to 0.04 gramme for each kilo of body weight.

Seven experiments were made on normal animals. Of these in five a marked increase occurred some time during the observation, and in two the rate was practically unaffected. In Experiment 1 minute doses were given and sufficiently repeated to develop gradually the complete train of symptoms in atropine poisoning. Notwithstanding the slow onset of the toxic action, the respirations never went above normal, but, on the other hand, exhibited a marked tendency to a gradual decline. In Experiment 2 a small dose was at first injected, yet the respirations were not increased until the lapse of thirteen minutes, when they became more and more rapid, so that by the end of the twenty-second minute they had quadrupled in frequency. A second injection of double the quantity caused a decided diminution. In Experiment 3 a dose proportionately about the same as in the last immediately produced an increase to more than double the normal ; this was followed at once by a decline nearly to the normal, the respirations for fourteen minutes being but one or two above it. Two more doses now increased the number threefold, and the rate remained hypernormal until death, which occurred twenty-one minutes after the first injection. In Experiment 4, in which a similarly proportionate dose was used, there occurred a primary fall which was at once followed by an increase to nearly triple the normal. The rate then became slower. A second dose was given with the effect of notably reducing the number for several minutes. This in turn was followed by a rise, and finally by a decline to below the normal. Further injections failed to produce an increase. In Experiment 5 one-half the proportionate dose was given, and with the effect of trebling the respirations. In Experiment 6, in which larger doses were employed, the first injection had the effect of increasing the respirations for two minutes ; they then became subnormal, and remained so until the lapse of twenty-five minutes—seven minutes before death—when they were increased one-third. In Experiment 7, in which

[1] Untersuchungen a. d. Physiol. Lab. Würzburg, 1867, I. s. 1—65.
[2] L'Etude de la Belladone, Paris, 1868.

at first relatively small quantities were used proportional to the size of the dog, the respirations were not notably affected until after three injections of 0.01 gramme each when they were doubled. Repeated doses of amounts varying from 0.01 to 0.05 gramme gradually brought the number down so that at twenty-seven minutes after the first injection they were only one-fourth of the normal.

These remarkably variable results can only be accounted for in peculiar inherent physiological properties of the poison, and are of unmistakable import when compared with the positive and uniform effects which follow the administration of such respiratory stimulants as ammonia, cocaine, etc. In other words, after giving a full dose of atropine it is impossible to predict what the effect on respiration will be; while with ammonia, for instance, an increase will inevitably occur.

The explanation of the uncertainty in the action of atropine is suggested in part by a study of its effects in animals, in which the pneumogastric nerves have been cut. Thus Bezold and Bloebaum and myself have found that after such an operation the respirations are invariably increased, and were from two and a half to five times more frequent; indeed, in some cases they were from ten to twenty times more rapid. The fact that the rate is always increased after section of the pneumogastric nerves is conclusive proof that the drug stimulates the respiratory centres; and the fact that the respirations are *always* increased proves that while the above nerves are intact the centres are in some way unfavorably affected. The explanation of the latter is obvious, when it is remembered that the respiratory centres are continually being innervated by impulses which are incessantly flowing from the pneumogastric peripheries in the lungs. Consequently when we make section of these nerves in normal animals the respirations are reduced to a half or even a sixth of the normal number. The same result will follow if we benumb or paralyze the peripheries of the nerves with poison, and this seems to be, as suggested by Bezold and Bloebaum, just precisely what atropine does. It so affects the nerves that the centres are robbed of their normal stimulus, hence the respirations tend to diminish. On the other hand, atropine acts directly on the respiratory centres as a stimulant, thus tending to cause an increase. It is obvious, therefore, that atropine acts on the respiratory function at the same time in two opposing ways, one (peripheral) tending to diminish, and the other (central) tending to increase. Hence, whether in any given case an increase or a decrease will ensue will depend, other things being equal, upon which of these opposing factors predominates.

It is a significant fact that after section of the pneumogastric nerves atropine is rarely able to restore the normal number of respirations. Its effect on the respiratory centres is, therefore, as a rule, far less efficient than the impulses which normally flow from the peripheries of these nerves to the respiratory centres. With these facts in mind, it is obvious why atropine at times fails entirely to increase the respirations, for it is apparent that unless the stimulant effect on the centres exceeds the depression of the vagi peripheries no increase can occur.

I have also noticed that after section of the vagi the respirations were very irregular and commonly partook of a Cheyne-Stokes character; they would for a time be greatly increased, then decreased to a remarkable degree. This occurred repeatedly throughout entire experiments, and the changes in the rate and character would take place without apparent cause. These curious and inexplicable phenomena were well illustrated in Experiments 8 and 10.

Thus clinical, experimental and toxicological data demonstrate clearly that atropine cannot be considered a reliable respiratory stimulant; and, moreover, that its valuable antidotal properties in opium poisoning are chiefly to be found in other actions, but precisely what these are is yet a matter for experimental determination. The fact that morphine is efficient in atropine poisoning renders it evident that apart from the antagonistic actions on the respiratory centres are others of even greater importance.

THE CIRCULATION.

The effects of atropine on the pulse and arterial pressure are equally uncertain, although Prof. H. C. Wood[1] states that in man there sometimes occurs a primary and transient slowing of the heart, but often from the first, certainly after a short time in all cases, the heart-beats, after a large dose of the alkaloid, become excessively rapid; and that in dogs and rabbits small doses cause an increase in the frequency of the pulse with a rise of pressure, and that larger quantities immediately reduce the pressure, although, as before, the pulse increases. But these statements, as a whole, are far from being accurate, this being particularly the case in connection with the effects in animals.

The observations of Mitchell, Keen and Morehouse on man show that in one-third of the cases the pulse fell within four to ten minutes after the subcutaneous injection of from a thirtieth to a fiftieth of a grain, and remained subnormal, the minimum being reached at the tenth or eleventh hour. In the other two-thirds it was unaffected at first, then rose rapidly after the seventh to the eighth minute, reaching a maximum generally within an hour. Putnam[2] states that in three cases in which the pulse was observed a fall occurred within ten minutes. In one it fell to 80 and remained so for an hour; in another it fell from 86 to 68, then rose above normal; and in another it fell from 92 to 80, to be followed by a rise above normal in ten minutes.

The experiments of Bezold and Bloebaum on rabbits and dogs are very instructive. Twelve were on normal rabbits and three on normal dogs. For the convenience of reference the essential features of the results in these experiments are given, reduced to tabular form, the plus signs representing an increase and the minus signs a decrease, and the o sign no change. These are arranged in the order of the size of the dose, the experiments on the rabbits and the dogs respectively being together.

[1] Therapeutics: its Principles and Practice.
[2] N. Y. Med. Record, 1873, p. 249.

No. of Experiments.	Dose.	Pressure.	Pulse.
1 Rabbit.	.0005	+	+
2 "	.001	+	+
3 "	.0025	+	+
4 "	.01	— +	— +
5 "	.02	—	+
6 "	.05	—	—
7 "	.05	—	o —
8 "	.05	—	—
9 "	.10	—	—
10 "	.10	—	—
11 "	.10	—	—
12 "	.40	—	—
14 "	.001	o —	+
13 "	.005	+	+
15 "	.300	—	+

In the first three experiments both the pressure and pulse were increased. In the fourth both the pressure and pulse were at first diminished, then increased. In the fifth the depressant action on the pressure begins to make itself more manifest as the dose is larger. The pressure was decidedly diminished, and the heart beats but slightly increased. When the dose reaches 0.05 gramme the pressure is greatly lowered and the pulse shows a decided tendency downward. In Experiments 6, 7 and 8 both pressure and pulse were decreased. In Experiment 7, although the pressure was greatly affected, the pulse did not appreciably alter for about an hour, and then fell. The doses in Experiments 9, 10, 11 and 12 were so large as to cause almost immediate death. In the three experiments on dogs, in the one in which the smallest dose was used both the pressure and pulse were enormously increased. In the next the pressure was unaffected for a half hour, then slightly diminished ; the pulse, however, was enormously increased. In the last the pressure was immediately diminished almost to zero, while the pulse was increased from 60 to 192.

The results of Meuriot's experiments on normal dogs are quite uniform. In five of eight thus made in which the dose was 0.01 gramme or less, both pressure and pulse were increased. In the other three the pulse was increased, but in one in which a dose of 0.05 gramme was given the pressure rose within fifteen minutes over 35 millimetres, and then fell ; in the last two the pressure fell from the first.

My own experiments on dogs afford results which are in accord with those of Bezold and Bloebaum. I have found that the same dose under apparently identical conditions will sometimes increase the pulse and at others diminish it. Similarly is the pressure affected, although, as a rule, there seems to be no relationship between these changes. The tabulated records of seven experiments, which include observations on the pulse, pressure and respirations, are here appended.

SERIES A.—Normal Animals.

Experiment 1. Dog; weight, 6 kilos.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration. Per Min.	Remarks.
.00		195	140	32	
.10	·0005				
.30		208	142	32	
1.00		216	138	30	
2.00		210	134	24	
.23	.001				
.40		216	128	25	
4.00		213	120	26	
.16	.001				
.30		210	116	22	
5.04	.001				
.30		207	110	22	
6.30		201	112	16	
8.30		194	106	24	
.44	.001				
9.00		198	109	24	
.13	.001				
.30		198	98	27	
11.00		195	116	21	
.18	} 0.10				6 injections were given, containing in all 0.1 gramme of atropine.
14.29					
15.00		183	102	18	
16.19	.004				
18.57	.01				
19.20		171	74	15	
.56	.01				
21.28	.10				
22.00		132	32		
.58	.20				
23.40		98	19		Killed with chloroform.

Experiment 2. Dog; weight, 6.5 kilos.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
.00		120	134	24	
.10	.01				
.30		162	122	24	
1.00		150	124	21	
2.00		150	125	22	
5.00		147	116	23	
10.00		152	120	21	
12.00		150	116	21	
.10	.01				
13.00		132	84	36	
16.00		139	128	47	
18.00		168	140	69	
20.00		188	154	81	
					Cut left vagus. Strong faradic current to peripheral end fails to inhibit the heart.
22.00		198	156	95	
.13	025				
.40		180	89	48	
24.00		168	118	50	Killed by chloroform.

EXPERIMENT 3. DOG; WEIGHT, 5 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
.00		126	154	17	
.08	.01				
.20		192	171	39	
1.00		210	158	30	
3.00		214	154	18	
7.00		214	154	18	
14.00		214	142	19	
.10	.01				
15.03	.025		110	30	
.10			56	55	
.20					
16.00		180	40	54	
17.00		152	80	30	
.15	.03				Powerful stimulation of vagus has no effect on the heart beat.
18.05	.05				
.15		121	60	29	
21.00					Respiration ceased.

EXPERIMENT 4. DOG; WEIGHT, 5 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
.00		150	129	18	
.08	.01				
.38		162	98	15	
1.08		144			
2.00		126	84	18	Force of h'rt beat str'gr.
3.00		109	65	30	" " "
4.00		105	64	52	
8.00		108	76	36	
10.00		106	79	24	
12.00		102	80	23	
15.00		108	80	25	
.19	.01				
16.00		96	70	21	" " "
18.00		99	90	14	
21.00		102	78	22	
24.00		104	82	23	
29.00		110	101	20	
31.00		120	105	15	
.40	.01				
32.30		85	14	15	
36.00		63	25		" " "
43.00		81	61	12	
48.00		87	64	14	
.43	.05				
49.00		63	26		Pulse curves very high.
55.00		78	34		
58.00		78	39		
60.00		84	60	12	
66.00		84	68	12	
68.00					Respiration ceased.

EXPERIMENT 5. DOG; WEIGHT, 10 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
00		84	181	24	
.12	.01				
.30		171	206	72	
2.00		246	224	72	
8.00		228	236	42	Very strong electrical stimulation of vagi fails to inhibit the heart. Cut both vagi.
10.00					
14.13	.025				
.30		165	242	39	
18.00		159	220	60	
20.00		153	220	60	
.40	.05				
21.00		144	186	54	
25.00		144	180	40	
.35	.05				
26.00		132	148	26	
.38	.05				
27.00		126	122	12	
30.00		110	104	2	
.33					Respiration ceased. Artificial respiration was resorted to, and the animal recovered respirations in a few minutes.

It will be observed from these records that in five out of the seven experiments the pulse rate was increased, and in the other two diminished, although in one of the latter there was a momentary increase immediately after the first injection.

The pressure was reduced in three throughout the whole time of observation; in one it was unaffected until the lapse of eighteen minutes, then somewhat increased; in another it was momentarily increased, then practically unaffected for fourteen minutes, when a second dose sent it down; in another the pressure was at once greatly increased, remaining above the normal for more than twenty minutes, when a larger dose caused a rapid decline.

Dosage only in part accounts for these differences; the larger the dose the more likely that the pulse will be slowed and the pressure diminished. These uncertain results seem at first sight very confusing, and may suggest that possibly some sources of error had crept into certain of the experiments, but a careful study of the results of observations on normal animals compared with those in animals after appropriate operations, elicits satisfactory explanations. For the facility of study, we will consider separately the pulse and pressure.

THE PULSE.—There can be no doubt that atropine exerts a powerful action on the inhibitory ganglion in the heart, acting primarily as a stimulant

EXPERIMENT 6. DOG; WEIGHT, 8 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
.00		153	128	23	
.14	.025				Pulse curves higher.
.30		144	68		
1.00		135	32	28	
2.00		129	26	27	
3.00		126	29	21	
4.00		120	38	16	
5.00		126	50	18	
6.00		153	72	15	
8.00		132	88	15	
10.00		135	88	12	
.16	.025				
.30		126	40	18	" " "
11.30		123	32	19	
13.00		129	44	24	
16.00		132	68	21	
18.00		132	78	21	
.25	.025				
19.00		126	38	23	
22.00		127	56		
.30		122	40	18	
23.05	.025				
.30		116	26	15	" " "
25.00		127	26	30	
.20	.05				
.40		117	24	27	
.50	.05				
26.30		114	20	30	
29.00	.05				
.30		120	22		
32.10					Respiration ceased. Heart still beats.

and secondarily as a depressant. The former is rarely observed except after very minute doses, and at times cannot be demonstrated at all with any dose. Its depressant power is always readily detected after full doses; indeed, generally with quantities but a fraction of the fatal dose, 0.01 gramme, given to a medium-sized dog by the jugular vein being sufficient to completely paralyze it. It is obvious if we thus functionally destroy this ganglion the heart beats will tend to be increased. Besides this, atropine exerts other strong influences directly on the heart, thus very minute quantities put upon the excised apex of the frog's heart cause it to beat rapidly, and as there are no discernible nerve cells in this portion of the organ it is clear that in such amounts it may act as a muscle stimulant. Here, then, is a second factor tending to increase the heart beats and inferentially to augment the force. There is yet another action: usually when atropine is placed on the excised frog's heart the beats become slower; this is often observed in dogs even after very small doses, and almost invariably after a time following large ones. Hence is there a third factor, and this operating to slow the pulse. It is obvious, then, that apart from the generally unimportant and transient primary stimulation of the inhibitory ganglion atropine acts directly upon the heart in three important ways—it depresses

EXPERIMENT 7. DOG; WEIGHT, 23 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
.00		151	142	39	
.12	.01				
.30		183	122		
1.00	.01				
.20		174	142	42	
2.00	.01				
.30		174	126	34	
4.00	.01				
5.20	.01				
8.00		180	140	78	
10.00		151	142	81	
.10	.01				
.40	.01				
16.00		168	138	80	
.20	.025				Violent struggles.
18.00		162	132	48	
19.00	.05				
.10		147	114		
21.00	.05				
.30		139	96		
24.00		146	72		
27.00		132	58	8	
.14	.05				
28.00		141	44	10	
.11	.05				
36.00		140	48	12	Killed with chloroform.

the inhibitory ganglion and thus increases the heart beats; it stimulates the heart muscle and consequently increases the number and force of the beats; and in some way lessens the number of contractions, doubtless by depressing the motor ganglion.

The cardio-inhibitory centres are even more profoundly affected than the corresponding ganglion in the heart. This is evident in the fact that after section of the pneumogastric nerves, by which the inhibitory impulses from the inhibitory centres are cut off, the pulse is rarely increased as in normal animals. In four experiments on rabbits and two on dogs Bezold and Bloebaum did not in a single instance note an increase. Meuriot in two observations of this kind records in both a decrease, although in every instance in normal animals he recorded a rise. My own experiments yield similar results, since in only one of four did the pulse go above normal. The results of three are here given:

SERIES B.—PNEUMOGASTRIC NERVES CUT. Tracheal canula inserted.

EXPERIMENT 8. DOG; WEIGHT, 14 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
.00		216	178	11	
.08	.01				
.30		201	176	5	
1.02	.01				
.30		195	162	6	
.57	.01				
2.40		192	136	27	
4.00		204	144	114	
8.00		189	138	66	
.07	.02				
.37	.03				
9.00		162	122	66	
12.00		159	168	6	
.23	.05				
14.00		150	94	61	
16.00		168	100	57	
.39	.05				
19.00		144	42	50	Killed with chloroform.

EXPERIMENT 9. DOG; WEIGHT, 6 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
.00		264	170	11	
.12	.01				
.30		252	160	12	
1.00		252	166	6	
2.00		237	158	12	
.19	.01				
.50		216	136	21	
4.00		207	136	48	
10.00		191	132		
.06	.05				
11.00		174	102	84	
13.00		174	38	59	
18.00			102		
24.00		177	116	29	
.52	.10				Pressure fell rapidly to 26 m.m., and the pulse was decreased.
26.00		147	26	12	
30.					Killed with chloroform.

The fact that neither Bezold, Bloebaum, nor Meuriot noted an increase in the pulse after section of the vagi would lead to the belief that the sole cause was to be located in actions exerted through these nerves. But both Lamattre[1] and Wood[2] found that an increase may still occur after section of the par vagum; an increase may be observed in the cut-out heart of the frog; and an

[1] Archives Générales, 1865, p. 173.
[2] Loc. cit.

EXPERIMENT 10. DOG; WEIGHT, 13.5 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Pressure. M.M.	Respiration Per Min.	Remarks.
.00		180	178	13	
.12	.01				
.30		174	158	9	
1.30		168	172	11	
3 00		215	164	18	
5.00		204	170	24	
10.00		176	162	216	
.41	.01				
11.00		178	150	243	
14.00		150	146	216	
.20	.02				
17.00		167	146	21	
18.00				215	
.43	.05				
21.00		174	104	12	
22 00				92	
.31	.10				
24.00		140	38	9	
31.00		162	110	18	Killed with chloroform.

increase is sometimes present in the heart of the mammal after its complete isolation from the nerve centres, as in one of my experiments. This is conclusive proof that there is another factor.

Bezold and Bloebaum were led to infer that the accelerator centres were stimulated, and Wood reaches the conclusion, on very insufficient grounds, that these centres, or possibly the accelerator nerves, are stimulated. But there is absolutely no experimental proof to warrant such statements, while, to the contrary, there is abundant evidence to show that neither is in any way involved. Bezold and Bloebaum showed nothing more than that the accelerator fibres remained physiologically intact, and that the pulse might still be increased after section of the vagi, while Wood's conclusion is based solely upon the facts that the pulse may be increased after section of the vagi, and that even after large doses of atropine the accelerator nerves are excitable to electrical stimulus.

Should the accelerator fibres be stimulated, as suggested, they would be more excitable to electrical stimulus, but this has not been shown to be the case. If the centres are stimulated, it is obvious that unless there is a direct action on the heart no increase in the pulse should ensue after cutting the accelerator fibres, since after such an operation the heart is cut off from the influence of the medullary heart centres.

Bezold and Bloebaum made five experiments on rabbits in which the heart was thus isolated, and in all of them recorded a decrease in the pulse. The doses they employed, however, were too large to determine fairly the actions of the drug under such circumstances. In one the dose was 0.01 gramme; in one 0.02 gramme; in two 0.04 gramme; and in the other 0.06 gramme. When we compare the results of these observations with those in normal animals in which similar doses were employed (see table), it will be

evident that in only two of these experiments could an increase have been anticipated, and even in these with some degree of doubt. In normal animals, when the dose reached 0.01. gramme depressant effects on both pulse and pressure began to appear, so that it is very doubtful if these results would have been materially changed had the experiments been made on animals with vagi and cord intact. In two experiments of Wood,[1] in which the cord was cut at the fifth or sixth cervical vertebra, and the pulse noted, an increase was recorded in both. Out of five experiments of my own in which both the vagi and cord were severed, in two an increase in the pulse was observed, and in the others a decrease. The records of the former are here given:

SERIES C.—THE PNEUMOGASTRIC NERVES AND SPINAL CORD CUT AT THE SECOND CERVICAL VERTEBRA.

EXPERIMENT II. DOG; WEIGHT, 10.5 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Remarks.
.00		120	
.12	.01		
.15		168	
.30		192	
1.00		192	
2.00		216	
3.00		228	
4.00		213	
.09	.01		
.25			
.35		204	
6.30		198	
.52	.05		
7.00		186	
8.00		180	Very strong electrical stimulation of the vagi failed to inhibit the heart.
10.00		162	
18.00		162	
.50		151	
.56	.01		
21.00		144	
28.00		144	
36.00		144	
			Artificial respiration stopped. No rise of arterial pressure occurred.
46.00		138	An autopsy showed that the sections of the nerves and spinal cord were complete.

I also made five experiments on dogs in which the vagi were left intact but the cord cut in the upper cervical region, and in two of them noted an increase in the pulse, and in the others a decrease. The occurrence of an increase at times after the isolation of the heart from the nerve centres is conclusive that a second factor in the production of the acceleration is a direct action on this viscus, and renders unnecessary an assumption that the accelerator centres

[1] Amer. Jour. Med. Sciences, 1873, LXV, p. 363.

EXPERIMENT 12. DOG; WEIGHT, 10 KILOS.

Time. Min. Sec.	Dose. Grammes.	Pulse. Per Min.	Remarks.
.00		106	
.02	.01		
.20		216	
.40		186	
1.30		192	
.37	.01.		
2.10		186	
.28	.01		
3.00		168	
4.00		171	
.07	.01		
.30		156	
5.00	.01		
.30	.02		
6.00	.01	145	
7.00		127	
8.00	.16		0.16 gramme injected in four portions.
12.40			
13.50		115	
16.00	.03		
22.00		116	Artificial respiration stopped. The arterial pressure did not rise. A careful autopsy showed that the sections of the nerves and spinal cord were complete.

or nerves are in any way involved. Certainly, if these centres are stimulated we would not expect to observe an increase as often, or at all events, not to the same extent, in those experiments in which the accelerator fibres were cut as in normal animals, or in those in which the vagi only were severed. When we compare the results of these two sets it is very apparent that the accelerator centres absolutely take no part whatever.

The increase in the pulse-rate is, therefore, to be attributed to two actions: a stimulation of the heart muscle (which may be caused by minute doses) and, pre-eminently, a depression of the cardio-inhibitory centres and ganglion.

The decrease in the pulse is evidently due to two actions: when it occurs immediately after giving the drug, especially after small doses, or when it is antecedent to an increase, there are sufficient reasons for justifying the conclusion that it is due to a primary and transient stimulation of the cardio-inhibitory apparatus; but where the decrease occurs throughout the experiment, especially after full or fatal doses, the action is to be located in the heart. The slowing of the pulse, which is dependent upon a stimulation of cardio-inhibitory apparatus, seldom can be demonstrated at all, and if present is unimportant and evanescent. The decrease observed in so many of the experiments of Bezold and Bloebaum represents an important action, and is due to a direct influence on the heart, since it occurs after this viscus is isolated from the nerve centres. This effect is chiefly owing to an action on the motor ganglion, because the decrease in the beats is not accompanied by any enfeeblement in the

heart's action, but, on the contrary, the pulse is stronger. That the heart muscle is not appreciably depressed is also shown by the fact that after the blood pressure has been reduced almost to zero enormous quantities may still be injected directly into the circulation, and even thrown into the heart in large doses, without changing either the number or character of the heart-beat, or notably affecting the pressure. The results in Experiment 6 exhibit very clearly these points: at the twenty-fifth minute the pulse was 127, the pressure 26 m.m., yet the injection of 0.15 gramme (two and one-fourth grains) within less than four minutes failed to materially modify these figures. The last dose was even thrown suddenly on the heart. This I have found to be a characteristic result of injections late in the poisoning in cases where the toxic phenomena are developed slowly. It is obvious that if atropine was to any extent a heart poison doses at this stage would make themselves manifest in a distinct enfeeblement of the beats, but a careful comparison of the number with the force of the pulse will show that the slow pulse is coincident with high curves. It therefore seems obvious that the important factor in the slowing of the heart-beat is a depression of the motor ganglion in the heart.

Wood takes exception to the experiments of Bezold and Bloebaum because he considers the doses used by them too large to show the effects of small quantities, he stating that the smallest dose was a grain and a half thrown directly into the torrent of the circulation. But this is an error; the largest dose they used in the series of experiments referred to was 0.06 gramme (less than one grain), and the smallest dose 0.01 gramme (less than one-sixth of a grain). The results of my own researches also show that the quantity of the poison necessary to decrease the pulse is but a small fraction of the lethal dose.

The actions of atropine on the pulse are, therefore, very complex and antagonistic, the chief ones being a depression of the cardio-inhibitory apparatus tending to increase the pulse, and a depression of the motor ganglion in the heart tending to diminish it. These important actions being antagonistic, it is evident that whether an increase or a decrease will ensue in a given case will depend, other things being equal, upon which prevails.

The Blood-Pressure.—The actions of atropine on the pressure are similarly complicated and antagonistic. After very small doses the pressure is sometimes immediately increased and then gradually returns to the normal as the effects of the drug pass off. In other cases it is diminished for a few minutes and then increased above the normal. In others it falls immediately and continues subnormal. The chief effects are either a primary increase, which is followed by a fall below the normal, or a diminution from the first. Large doses reduce the pressure immediately and profoundly.

The experimental evidence offered by various observers and supported by the results of my own researches, is sufficiently conclusive to justify the statement that the increase of pressure may be due to a primary stimulation of the heart muscle, and to a stimulation of the vaso-motor centres and peripheries. The former is an unimportant factor, and the latter is largely concentrated on the centres in the medulla oblongata. The fall of pressure is almost if not solely of vaso-motor origin, and dependent upon a depression of both the

centres and peripheries, but chiefly the former. Even when the vaso-motor system is so completely paralysed that the pressure is almost at zero the heart's action is strong, and large doses may still be injected before the heart-beat ceases.

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THE EFFECT OF TERM EXAMINATIONS ON THE VISION OF SCHOOL CHILDREN.

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THE system of *term examinations*, now in vogue in our schools, so frequently causes permanent injury to the eyes of the children that it is deemed of sufficient importance to bring before the readers of the MAGAZINE.

In order to determine the class standing of the pupils midwinter and June examinations are held. This procedure calls into play the ambition of both the teachers and pupils. The former, very naturally, are anxious that the class should be able to pass the examinations creditably, since it furnishes an indication of successful teaching; while, on the other hand, the ambition of the children is excited, not only by a laudable desire to excel, but by the fact that their promotion is made contingent upon their ability to pass the examination. It follows that, for a few weeks before the expected trial, teacher and pupil are prompted to extraordinary diligence in reviewing the work of the term, requiring upon the part of the children a considerable increase in the number of hours for study, thus trespassing upon the time which should be devoted to recreation or sleep. The depressing influence which such a course must exert over the general vigor of the growing child is too obvious to call for more than passing mention.

It is, however, to the baneful influence exerted upon the eyes of the children that attention is here especially directed. While it is doubtless true that the protracted strain imposed by the preparation for these term examinations falls with more or less injurious effect upon all, it is fraught with peculiar danger to defective eyes, the percentage of which is so large in our schools that we cannot justly consign them to the operation of the harsh law of "the survival of the fittest." In discussing the hygiene of vision in our schools, we cannot neglect the important fact, now so well understood, that a very large percentage of our children enter upon their school life with congenitally defective eyes. Many of these could not escape injury under the best conceivable educational methods, and should, therefore, become the subjects of professional advice; but a large percentage of those who suffer harm under present

methods would, with proper hygienic arrangements, be able to pursue their studies without injury. To this end it should be borne in mind that the injury is consequent upon the prolonged work at a near point, *e.g.*, in reading, writing, etc.

It is not the purpose in this paper to discuss the general principles of the hygiene of vision, but simply to point out the harm resulting from the spasmodic endeavor to make up in a few weeks for the deficient industry throughout an entire term. The many advantages inherent in steady and methodical application in the performance of any set task are well understood and elsewhere practised, but too frequently neglected in the use of the eyes. The injury results from the infringement of a well-known physiological law. The eye, in common with other organs, becomes congested during the performance of its allotted function, and requires intervals of rest during which the congestion can subside. If, however, the engorgement is pressed beyond the normal limit by extraordinary occasion, or is maintained too long by continuous exertion, pathological processes are set up which impair the integrity of the highly-organized tissues of the eye. Furthermore, the anatomical peculiarities of the eye seem to render it especially liable to hyperæmia and to the resulting injury, since the increased blood supply increases the intraocular tension and this in turn retards the ready escape of fluids, thus producing a vicious circle, particularly harmful to the readily-yielding tissues of the young eye. Now, the system of term examinations under discussion, prompting as it does to weeks of extraordinary and prolonged work at a near point, furnishes all the conditions needed to bring about the vicious process here suggested.

That these theoretical considerations are of much practical importance finds frequent demonstration in the daily routine of professional work. Were it deemed desirable to cumber the pages of the MAGAZINE with the tiresome details of illustrative cases, many such might be cited from my case books, and would only demonstrate the necessity for some modification of the system of examinations now employed. I have very many times been annoyed and disappointed over the almost sudden relapse of choroidal disease, in patients under observation, often with an increase of the refraction, indicating a distention of the eye-ball, brought about by the stress of work required in preparation for the examination at the close of the school year, and this after the steady work of the term had been accomplished without harm.

For example :

Miss H., a pupil in one of our large schools, came for relief from violent asthenopia. She was a member of a family several of whom were sufferers from hypermetropic astigmatism. Her vision was reduced to $\frac{1}{5}$, due to an apparently high degree of myopia, and was associated with flannel-red eye grounds and a commencing absorption crescent at the temporal side of each disc. Under the use of a solution of the sulphate of hyoscyamine the apparent myopia disappeared, the correcting glasses being a simple concave cylinder—0.50 D. axis 180° in each eye. With this V=$\frac{6}{vi}$, and she was allowed to return to her work, which she pursued without harm or serious trouble until the term examination, under the strain of which her symptoms once more returned, together with the so-called spasm of the accommodation simulating myopia, which retired once more under the use of a mydriatic. This experience was three times repeated, once with an actual increase of refraction, doubtless representing a permanent expansion of the eye-ball.

This case is thus briefly sketched, without detail, simply as the representative of a large group.

Satisfactory vision is such an important factor in the educational advancement of the pupil that it should command the earnest attention of those to whom we have committed the grave responsibility of educating our children. It does not fall within the province of the physician to sit in judgment upon the relative merits of the educational methods of our schools, but I submit that in deciding upon the course to be pursued the physical well-being of the child should be seriously considered, and methods shown to be injurious either modified or abandoned.

With reference to these term examinations, I cannot refrain from suggesting, even at the cost of seeming presumption, that, in view of the great strain upon the physical endurance of the children, better results would be reached in the end by a more careful and persistent effort to fix the lessons of the term upon the mind by frequent reviews and careful teaching throughout the term, and by allowing the class standing and fitness for promotion to be determined by the marks for recitation and by the teacher's knowledge of the pupil gained by daily contact. In this I am not unmindful of the practical difficulty of securing a uniform standard for promotion, particularly in our public school system, but this should not be allowed to outweigh the too frequent serious impairment of vision and general vigor consequent upon the present method of term examinations.

THE TREATMENT OF FELONS AND SOME INFLAMMATORY TROUBLES OF THE FINGERS.

By G. G. Davis, M.D., M.R.C.S.
of Philadelphia.

The fingers, from the continual exposure and use to which they are subjected, are the seat of some affections of an inflammatory and ulcerative character which are exceedingly troublesome, and are sometimes obstinate in their course. That they do not progress more favorably is due, I believe, to a lack of that careful and thorough treatment that is necessary for their cure.

They originate in most cases from injuries, such as bruises, particularly those which break the nail, punctures from pins, splinters and other septic substances, and improper tampering with the nail and the skin surrounding it. The most important of these affections are onychia, paronychia and panaris, also called whitlow or felon. The fingers can also become the seat of eczemas and pustular troubles, but as these present no special peculiarities they will not be dealt with here.

By onychia is meant an ulcerative affection involving the matrix of the nail. In many of the cases which I have seen it has been started by some injury which exposed the matrix. When this has been once done and the part

left uncared for, dirt and bruising will soon cause the parts to inflame and suppurate. Infection having occurred, the disease becomes rapidly worse, until the whole nail becomes lifted, the matrix suppurates freely and there is a bad odor and considerable pain.

These cases are usually seen by the doctor after domestic treatment has been found useless. Poultices have been tried, and their effect has been to increase suppuration and aid in its putrefaction. Notwithstanding their baleful influence, it is not uncommon for physicians to advise their use. The nitrate of lead is another substance that, along with the poultice, should be consigned to obscurity. Onychia is a suppurative affection that is kept alive not by a constitutional taint but by local infection. This is the rule, and the exceptions are very few. When a case presents itself for treatment we must bear in mind that disinfection is the first thing to accomplish, and cases only prove obstinate according to the difficulty experienced in attaining this end. We must endeavor to expose all ulcerating surfaces so as to render them accessible to the disinfecting agents; therefore, remove with forceps and scissors every particle of nail that is loose. Any that is still attached to the matrix is allowed to remain. We do not want to cause a new focus of inflammation by inflicting an additional injury on the part, but cut away every particle of detached nail so that there is nothing to favor the accumulation of foul pus. This is a tedious procedure, but it must be done thoroughly. Next wash away all pus and apply the disinfectant. Peroxide of hydrogen, full strength, sprayed on with an atomizer or dropped on, is good; but best of all, I believe, as being more lasting, is a strong solution of nitrate of silver, thirty or forty grains to the ounce. This may be thoroughly painted on with a camel's hair brush, and an effort made to introduce it into the furthermost recesses of all nooks and crannies. As this is applied principally to granulation tissue it will not cause pain. Then dust the part with aristol or iodoform, and wrap around it a thin layer of bichloride gauze. Some absorbent cotton and a bandage complete the dressing. This can be left on two days; on the patient's return the process is repeated and the nitrate of silver again applied, and so on till disinfection is accomplished.

When the granulations are so abundant as to make a direct application of the gauze objectionable, I generally use a small piece of lint spread with iodoform or boracic ointment, and cover it with the moist gauze. Under this treatment improvement takes place at once, and some cases require only two or three dressings; others, when it is difficult to get the nitrate of silver well down to the seat of the suppuration process, take longer, but success is directly proportional to the thoroughness with which disinfection is accomplished.

The term paronychia, although applied to inflammations of various parts of the finger, I prefer to restrict to those which surround the nail. Tearing and injury of the skin around the nail are usually the causative agents. When the skin around the nail has been torn it is quite painful, and, if neglected, is apt to cause trouble. The essential element in its treatment is to protect the part from further irritation until it has been replaced by sound epithelium. This is best done by cutting off the projecting piece or filament of skin and then dropping on a few drops of collodion, or even using court plaster. This makes a protecting covering under which healing progresses satisfactorily.

When the inflammation surrounds the base of the nail with no suppurative point, paint the part with strong nitrate of silver solution and envelop it with a strong solution of lead water, say one part of Goulard's extract to four of distilled water. If suppuration is present, then incise where there is retention of pus and apply the nitrate of silver solution; also, with a small, sharp, flat stick lift the skin up from the nail as much as possible and, with a camel's hair brush, introduce the solution as thoroughly as possible beneath. The effect of treatment is not so readily seen in these cases in which there is no suppuration as in those in which it is present. The clubbed condition of the finger seen in onychia subsides when the suppurative process is checked.

Panaris, or felon, is a localized inflammation affecting primarily the deeper layers of the skin and the superficial fascia. I do not believe there is any such thing as a "bone felon" except as an extension from the superficial to the deep structures. Of course if a penetrating body, such as a nail, wounds the periosteum itself, then it may inflame simultaneously with the more superficial structures; but that inflammations of the periosteum occur idiopathically, as so many seem to think, is, I am sure, not correct.

Panaris in its earliest stages is a puzzling affection to treat. Early incision is no doubt our most efficacious resort, but to employ it when unnecessary is bad surgery, and some of these cases subside without suppuration. No positive rule can be given, but my practice has been to resort to incision when either the pain has been so severe as to prevent sleep for two successive nights, or when, from the violence of the local trouble, I am convinced that suppuration is inevitable. Supposing we have a case in which we think it wise to defer incising; then I would advise keeping the affected finger wrapped up in cloths wrung out of hot water and covered with oiled silk or additional woolen cloths. A patient with an impending felon can well afford to nurse it a couple of days. The attendant pain can be lessened by the use of opiates, enough being administered at night to produce sleep. At the same time a good purge should be given, with Epsom salts. One or two days of this treatment is usually sufficient to decide the course of the case one way or the other, and then the treatment is obvious.

After incision of a felon the point of greatest importance is to see that the opening made does not become so blocked up by scabbing or the adhesion of the dresssng as to prevent the free egress of the discharges. Having tried many forms of dressing, I have settled on oakum wrung out of bichloride of mercury solution, 1–2000, as being by far the best. This is less apt to clog the wound than any other substance I am acquainted with. It is much better than gauze. My procedure is as follows, primary anæsthesia with ether being almost invariably used: A basin of warm bichloride solution, 1-2000, containing a couple of wads of absorbent cotton is prepared and a small amount of oakum, wrung out of the solution and picked loose, is laid on a piece of waxed paper or oiled silk. This is then dusted with aristol or iodoform. Adjacent to it is placed a finger bandage, pin, bistoury and pair of scissors. The patient lying down with a clean towel beneath the affected hand, an assistant, if present, administers the ether on a towel until the stage of excitement supervenes. When pinching or

pricking the skin shows that sensibility is lost, then an incision is rapidly and thoroughly made, the finger is well washed with the bichloride solution and the pus is all squeezed out; the wound is then dusted with aristol or iodoform, a small strip of oiled silk is inserted, and the dressing is applied and bandaged to the finger. If skilfully done the patient will have regained consciousness before the application of the bandage is completed and, after a short rest, will be able to walk out of the office unattended. He should be seen the next day and the dressing should be removed and a clean one applied, a careful examination of the wound being made to be sure that it has not closed. Should the pain not subside by bed-time (a rare event) an anodyne can, with benefit, be resorted to.

There is a kind of panaris which I have often met, but not seen described, which I will call superficial panaris. The patient is seized with intense pain in the finger, which becomes red, slightly swollen and tender to the touch. After twenty-four or thirty-six hours a large bleb forms, its contents being purulent. In treating it the uplifted epiderm is removed with scissors, and the exposed raw and tender true skin is cleaned with peroxide of hydrogen or brushed with a solution of nitrate of silver and dressed with either boracic ointment spread on lint, or with a mild dusting powder. Suppuration usually ceases at once and a new epiderm rapidly forms. It is in these cases that the mistake of unnecessarily incising is apt to be made. The subcutaneous tissues are not affected, and it is only the upper layers of the true skin that are involved.

THE SYMPTOMS AND DIAGNOSIS OF TUBERCULAR OSTEITIS OF THE JOINTS.

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Tubercular osteitis of the joints pursues much the same pathological course wherever met, but the major articulations, particularly the knee and hip, best illustrate its clinical aspects. For obvious reasons chronic articular osteitis, or fungous disease of the knee-joint, will here best serve the purpose.

Symptoms.—The symptoms of this disease, which is essentially chronic, can most suitably be discussed by classifying it under three stages; 1, an incipient stage; 2, an acute stage, and 3, a later stage.

This classification is practically identical with that of Mr. Adams, and attempts to give information as to the condition of the joint. First stage, from the onset to the formation of pus within the joint; second stage, from the end of the first stage to the formation of abscess outside the joint; third stage, from the formation of abscesses to complete anchylosis or the death of the patient.

These divisions correspond to (1) localized bone destruction ; (2) suppuration of joint contents ; (3) reparative or destructive processes.

First Stage.—Beginning usually as an epiphyseal osteitis, its onset, as a rule, is very insidious. A slight pain or stiffness, attributed to growth or rheumatism ; a slight limp or halt in walking, transient, recurrent, disappearing after a night's rest, mark the gradual onset of this grave malady. Associated with these there may be an indisposition, a languor, an unnatural inactivity, and an indescribable something included in that comprehensive word *malaise ;* or the general health may remain unimpaired.

With the destructive advance of the local process the symptoms assume a more positive character, and a decided limp, intermittent pain, swelling of the joint, discoloration of the skin, defective movement and muscular wasting, with marked constitutional disturbance, indicate the true character of the morbid affection and attract attention to the part.

Lameness.—The slight limp observed in the early stage is due to the pain experienced on motion, and the efforts of the patient to diminish the shock of the impact of the foot upon the ground. Later the contraction of the knee, together with the impairment of motion and complete stiffness, produce a positive shortening and interference with free motion, which is characteristic. In some instances an increase of one of the condyles, usually the internal, causing knock-knee, adds to the amount of disability and increases the limp.

Pain.—The pain at first is paroxysmal and slight, of a dull aching and gnawing character, produced or increased by jarring. Later the suffering during the acute exacerbations is severe and excruciating. This is somewhat diminished by the muscular spasm by which the joint surfaces are held rigid, and motion is limited. Tenderness or sensitiveness on pressure is also present, the tender spot being usually on the internal condyle, about half an inch from the patellar edge.

Swelling.—The tumefaction of the joint is characteristic—shapeless, uniform, obliterating the natural configuration of the part, filling the depressions of the sides of the patella—giving an indistinctness of outline and roundness of appearance that cannot be mistaken. Its consistence is soft, inelastic and doughy, softer in some spots than in others. Unless the effusion be large, the patella is not floated up as in synovitis, but appears fixed in a soft gelatinous mass, or may even appear depressed from prominences upon either side.

Discoloration.—Instead of the bright red color typical of inflammation, the skin retains its natural hue or loses its color and becomes white, from whence it has derived the name of "white swelling." The surface is marked by blue tortuous, superficial veins.

Heat.—Elevation of temperature is also absent, and in some cases the part may present to the hand the impression of cold. Pyrexia is likewise absent.

Limitation of Motion.—Among the earliest positive symptoms the writer would lay particular stress upon this symptom. Preceding even the symptoms of local joint mischief, a limitation of motion, particularly in forced flexion and extension, is characteristic of osteitis. This is due to a reflex tetanoid spasm, present in both the first and second stages of the disease, but increased

during the exacerbations, and leading to the atrophy subsequently observed. It is most marked in the flexor muscles and produces the subluxations and complete luxations of the second and third stages.

General Condition.—Even in this early stage the expression is anxious, careworn, and apprehensive; sleep is restless and disturbed, but without the sharp and sudden cry and pain to be noted directly; the appetite is capricious, the digestion feeble, the disposition irritable, and in every way the general condition denotes a local annoyance and physical distress that is harassing and debilitating to the constitution.

Second Stage.—As the disease progresses, the second stage is ushered in by night cries and starting pains. The local pain changes its character, and abnormal movement, with joint crepitation and subluxation, muscular atrophy and abscesses, indicate the destructive nature of the pathological process.

Night Cries.—These starting pains are characteristic of bone mischief, and Barwell considers them to indicate commencing ulceration of cartilages. They are not so common as in chronic arthritis of the hip, and they occur usually when the child is first sinking to sleep. Their exact nature is uncertain, but they probably result from an unguarded twist, and the subsequent reflex muscular spasm.

Pain.—In addition to the acute suffering experienced during the exacerbations, there is also present during this stage what Barwell has well described as "intra-articular tenderness," and which he believes indicates that the articular lamella has given way, and the bone cancelli are open to the joint. It is a soreness, increased upon the slightest motion, and renders the patient very apprehensive.

Abnormal Movement.—From intra-articular destruction the joint surfaces admit of motion in abnormal directions, eliciting also a grating or joint crepitus from friction of the exposed osseous surfaces. This must not be confounded with the posterior displacement of the head of the tibia upon the condyles of the femur, which commencing earlier, may at this stage be excessive and amount to a subluxation or even to a complete backward dislocation. These are often associated, and indicate softening or destruction of the ligaments, and great intra-articular disorganization. Joint crepitus may, however, not be elicited, even though great destruction exist, from the luxuriance of the granulations filling the joint cavity.

General Condition.—The constitution likewise suffers. Pyrexia, anorexia, sleepless nights, emaciation and debility characterize the second stage of the affection.

Third Stage.—The third stage is marked by repair and anchylosis of the joint, or its total destruction, with hectic, exhaustion and death from some visceral lesion.

Abscesses.—Though abscesses may develop earlier intra- and extra-articular suppuration is characteristic of the third stage. The pus does not find ready exit, and may open at some distance from the seat of the disease, or after separating the integument from the underlying connective tissue, will gradually open and discharge a quantity of ill-formed, ichorous pus, filled with flocculi.

Upon microscopical examination the pus was found by Koch, in two out of four cases, to contain the bacillus tuberculosis, and Schuchardt and Krause, at Volkmann's clinic, and Kanzler, Müller, Castro Soffia, Roswell Park, and others elsewhere have found there is still greater relative proportions. The importance of the direct association of tubercular osteitis and the tubercle bacillus cannot be overestimated.

The disease, however, may run its entire course without suppuration, or it may easily undergo cheesy degeneration and absorption, and *caries sicca*, identical with that found in the vertebræ and elsewhere, may be present.

Recovery.—If the tendency is to recovery with anchylosis, the gradual amelioration of all the constitutional and local symptoms—increased appetite, undisturbed sleep, reduction of temperature, improved circulation and better complexion, diminished suppuration, and the stationary condition of the local symptoms, indicate the change for the better. Later the sinuses close, the joint shrinks, hardens, and becomes stationary in its abnormal position, and anchylosis, with shortening, muscular atrophy and fixation marks the cessation of the morbid process within the joint.

Destruction.—As the disease advances the destructive progress of the disease is marked by an increase of all the symptoms; the patient becomes apathetic, the hectic is marked by greater ranges of temperature, the evening exacerbations are higher, complete anorexia, greater restlessness, scanty, albuminous urine, profuse night sweats and possibly diarrhœa, lead to great exhaustion. Notwithstanding this formidable and melancholy array of symptoms, patients do not die of the joint affection alone, but of amyloid disease of the abdominal viscera (liver, kidneys and spleen), from the excessive suppuration; or of other tubercular affections, particularly meningitis.

Pari passu with these severe retrograde general symptoms, the local disease is making rapid progress toward the total destruction of the joint. The joint increases in size and softness, the muscles atrophy greatly, the bones become more movable or are completely luxated, the skin over the parts desquamates in large flakes, and the sinuses become filled to overflowing with luxuriant granulations.

Diagnosis.—The general diagnostic signs of tubercular osteitis of the knee-joint are intermittent lameness, paroxysmal pain, general rounded swelling, heat over the joint and a tender spot to the inner side of the patella on pressure, with limitation of motion and atrophy. The two last symptoms are peculiarly significant of osteitis, and upon them the writer places most reliance. Being a reflex tetanoid spasm, it appears very early, in some cases even before the disease has set up much intra-articular mischief, or in other words, while the disease is still confined to the epiphysis or epiphyseal cartilage.

Later, the character of the swelling, the location of the tender spot, and abscess formation, with night startings and cries, render the diagnosis certain. But, for treatment to be efficient, it is essential that an early diagnosis be made, and as direct aids to this great stress should be placed upon the two cardinal symptoms before referred to.

Differential Diagnosis.—Tubercular osteitis must be distinguished

from synovitis, rheumatitic and pyæmic arthritis, arthritis deformans, peri-arthritic disease, and neuromimesis.

Synovitis.—It is with this affection, particularly in the earlier stages, that tubercular osteitis is most frequently confounded, and if subacute and without effusion, it is difficult or impossible to distinguish between them. It is chiefly upon the character of the swelling (the effusion) and the reflex symptoms upon which the differential diagnosis rests. If the *swelling* in synovitis be large the patella, by pressing upon it, can be depressed until it is felt to strike against the bone; and on relaxing the pressure it floats up again upon the fluid within the joint. Fluctuation, too, may frequently be detected. In osteitis the swelling is soft, inelastic and doughy, filling the sides of the patella and fixing it immovably. The localized pain, the reflex spasm and atrophy, are all absent in synovitis, and motion is often in the latter but little impaired.

Acute Rheumatic Arthritis.—This affection, which partakes of the nature of an acute synovitis, is characterized by the sudden onset, the local manifestations being preceded by pyrexia, the association of other joints, localized œdema about the affected joints, and the acute, essentially pyrexial nature of the disease.

Pyæmic Arthritis.—Acute purulent arthritis, as a complication of traumatic infective fever, resembles the tubercular osteitis in its destructive nature and the presence of chills, fever, sweating, progressive emaciation, and loss of strength, as it also does in the local symptoms; but it is readily distinguished from the latter by the rapid course, the association with traumatic fever, and by the character of the suppuration, which contains the bacteria of the acute infective processes, and does not contain the bacillus of tuberculosis.

Rheumatoid Arthritis.—This affection, particularly that division known more accurately as osteo-arthritis, resembles the tubercular osteitis in the character and location of the pain, in the contraction and limitation of motion, and the enlargement of the joint and the muscular wasting. Moreover, it may occur at any period of life. It is, however, to be distinguished by the synovial character of the tumefaction, by the absence of fever, rigors, sweating, suppuration and muscular spasm, and by the roughness of the crepitition, the participation of other joints, and its predilection for mature and advanced life. The muscular wasting is the atrophy of disuse.

Peri-arthritic Disease.—Peri-arthritic or peri-articular abscesses and inflamed bursæ, are to be distinguished from the graver affection by the position and fluctuation of the swellings, their relation to the patella, the entire absence of muscular spasm, atrophy, joint stiffness, and constitutional disturbance.

Neuro-mimesis.—Functional or hysterical joint disease occurs most frequently in young females of the upper class, and usually in those of a pronounced brunette type. This pseudo-arthritis can, however, readily be distinguished from the genuine disease by the absence of swelling, redness, atrophy or muscular spasm, by the superficial but exaggerated nature of the pain, the suddenness of the attack, and the fact that the appetite and general condition are not affected. Moreover, the position of the limb is unchanged, and there is no tendency to suppuration. The limitation of motion disappears under mental emotion, and its free motion is not then accompanied by increased pain.

MEMORANDA.

OVULATION AND MENSTRUATION.

THE following case came under my observation while I was a resident physician to the Philadelphia Hospital, and occurred in the wards of Professor B. C. Hirst:

G. R., aged 21, was born in Germany of healthy parents. She was a stout, ruddy girl, and had never had any severe illness. At 18 she was married to a phthisical man, but bore no children before his death, which occurred three years later. Until her marriage patient had never menstruated, nor had she any kind of vaginal or uterine discharge. Shortly after her marriage, however, a leucorrhœa set in and continued until three months before her admission to hospital, which was about October 1, 1889.

Sometime before the cessation of the leucorrhœa she consulted a gynecologist, who, after examining her, told her that she was pregnant. Thinking this impossible, as she had never menstruated, she went to the dispensary for examination, and the opinion was confirmed. Shortly after this she was admitted to the Philadelphia Hospital, and on October 1, 1889, was delivered of a healthy child.

Similar cases, and others of conception during the menstrual pause of lactation and after the menopause, have been reported from time to time (some cases are referred to by Bischoff, *Med. Wochenschr.*, 1875, 20–24), and they admit of no doubt that ovulation may occur without menstruation. What relation menstruation bears to ovulation has not been satisfactorily determined, and while some strenuously maintain that without the discharge of an ovum no menstruation can occur, others are as sure that it may. The latter have some show of proof in the occurrence of a few flows after extirpation of both ovaries.

The works of Mayerhofer, Slavjanski, Leopold and others prove conclusively that there is not an invariable association of menstruation with the discharge of an ovum. Leopold's papers, especially, are interesting (*Archiv. für Gynæc.*, vols. vi and xi). He records the results of examinations by himself and others of ovaries removed at varying periods after menstruation, and concludes that ovulation does occur between the periods, though such occurrence is probably exceptional. Beigel holds the extreme view that ovulation proceeds from early childhood without accompanying menstruation, and bases his claim on his discovery, confirmed by Valisneri and Casus, that Graafian vesicles, more or less mature, may be found in the ovaries of children, or even of the newborn. To this Bischoff objects that the presence of such follicles does not prove the extrusion of ova, and ascribes the failure of Beigel to find ova in the vesicles to the difficulty of the work rather than the absence of ova. Further, he contends that such follicles often undergo a subsequent atrophic change, and are obliterated.

Bischoff, after Ponchet, admitting that ovulation may occur at other times than at menstruation, believed that no conception could follow from the

want of proper preparation of the uterine mucous membrane. Such a theory cannot be held in cases like the one here reported.

The only conclusions that seem warranted by the facts in our possession are: that ovulation may begin before menstruation and persist after its cessation; that ova may be discharged in the intermenstrual pauses, or during its temporary abeyance; and that the menstrual phenomena, though usually associated with ovulation, may exceptionally be developed independently.

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TENOTOMY OF THE PERONEI.

SECTION of the peronei tendons for flatfoot is said by Barwell to be necessary only in the rarest cases. But however true this may be in per valgus acquitsitis (acquired flatfoot) in per valgus paralitica, especially infantile paralysis, the writer believes tenotomy to have a much wider field of application, for during the past three months he has performed it in two private cases and has assisted in one operation in public. All of these cases have been much benefited by the operation.

Application.—Tenotomy of the peronei muscles should not be resorted to except in the severest cases, and only after mechanical measures have failed to adduct the foot. In these cases, in addition to severe marked flatfoot, the foot is markedly abducted and in some cases rotated outward and backward. In such cases when the foot is mechanically or manually placed in a normal position these peronei tendons stand out prominently behind the external malleolus, and when the hand or instrument is removed, the foot flies around into its exaggerated false position.

These so-called antagonistic contractions are not muscular actions, but, as pointed out by Huetex, are due to atrophy and lack of growth. Volkmann has shown that the permanence of these deformities does not depend upon tonic retraction, nor is the shortening of the muscles due to contraction, but to the growth of the limb, the foot remaining in its deformed position.

Operation.—Much of the success in performing tenotomy is due to attention to detail, and the same detail in the technique is required here as in other localities. If the slightly sickle-shaped knife of Dieffenbach be employed no other instrument is needed, but if a probe-pointed tenotome be used, another sharp-pointed instrument must be employed to puncture the skin. Anæsthesia is not absolutely necessary, and two out of the three operations referred to were performed with local anæsthesia alone.

The parts rendered aseptic and insensible are held in a position which renders the affected tendons prominent. A puncture having been made a short distance behind the external malleolus so that it will not correspond with the one in its deeper tissues when the parts are relaxed, the blunt-pointed tenotome is passed either over the tendon, between it and the skin, and the division of

the constricted tendons accomplished by cutting directly down upon the external malleolus, or, as the writer prefers, the tenotome is passed beneath the tendons and the cut is made directly outward, care being taken not to cut the skin or increase the size of the puncture.

The proper division of the tendons is evidenced by an audible crackling and the fact that the foot now remains in its normal position. The tenotome is then turned flatwise and withdrawn; the operator compressing the wound to prevent the ingress of air, places an antiseptic dressing upon the part, and secures it in position with a plaster of Paris bandage. Over-correctness is not necessary in these cases, as relapse is not so likely to occur as after the correction of similar congenital deformities.

The wound need not be inspected for from ten days to a fortnight unless pain or elevation of temperature call attention to the foot. At the expiration of two weeks the cast may be removed, and if the parts are in good condition the mechanical support which was removed at the time of the operation may be replaced. In some cases so much improvement may have been accomplished in the position of the foot that the mechanical support may, and usually will, require alteration before it can with propriety be employed.

After operations of this kind the same careful attention to detail of after-treatment must be employed as after operations for congenital deformities. Indeed, the after-treatment requires as much, if not more, attention as the operation itself. Massage of the affected muscles and tendons, protection of the bony points from pressure, and the use of electricity will all be required.

With due attention to the technique and after-treatment in selected cases it is to be hoped that tenotomy of the peronei will receive an assured position among the recognized operative measures for the relief of deformity.

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CARIES OF THE WALL OF THE AUDITORY CANAL.

AN article with the above title, from the pen of Professor Randall, in the UNIVERSITY MEDICAL MAGAZINE for November, 1890, recalls to me a very interesting case of the same trouble, which although it caused the patient a great deal of suffering and the doctor no little anxiety, happily ended with very good hearing and altogether with a very good result.

I was first called to see the patient, a young married woman of 24, on December 25, 1889. I found her in bed, suffering intensely, having had an attack of "la grippe" and now affected with otitis media in the right ear. The watch could not be heard in either ear, the hearing of the left having been lost some years before from a severe inflammation. She could hear a loud voice close to the ear only with great difficulty. She had been suffering for about a week and under the care of an excellent general practitioner. The ear was intensely painful, and all of the surrounding tissues ex-

ceedingly tender to the touch. There was much swelling over the mastoid, and I thought a mastoid abscess imminent, but as there was some discharge of pus from the ear I delayed operation and used leeches, hot water and opiates freely. The pain was relieved somewhat in a day or two, but the discharge continued freely and the deafness was quite marked. She remained in bed and was treated at her home for some days, but by January 13, she was able to come to my office, where after careful cleansing of the ear and use of the Eustachian catheter, hearing with the watch was ½ inch, and by January 18, this had increased to 2 inches.

On January 20, she was worse; pain and swelling of the mastoid had increased and I again ordered leeches, and on the twenty-fifth, a blister. Discharge of pus continued and by February 1, a small polypus appeared in the auditory canal, which readily yielded to applications of chromic acid. By the latter part of February the discharge from the middle ear had entirely ceased and all mastoid symptoms had disappeared, but there now appeared small wart-like excrescences on the posterior wall of the canal at the original seat of the polypus, which I scraped away, touching their bases with chromic acid. The patient came regularly twice a week for treatment, and was doing well except for the slight discharge from this spot. About the middle of March these granulations were again prominent, at which time I scraped them away thoroughly and down to the bone, when I found for the first time considerable caries of the posterior wall. This I curetted thoroughly, cleansed and dressed the parts antiseptically. From this time on practically there was no more discharge; spray to the nasal passages was continued and occasionally the Eustachian catheter used. By April 7, hearing had increased to twelve inches with low watch, and by May 16, to twenty-four inches, at which time she was discharged from treatment; the perforation of membrana tympani had healed. The left ear had also received attention during this time, but with no improvement in hearing.

Here, then, was a complicated case, involving first the tympanum, then the mastoid and finally terminating in caries of the wall which, with energetic treatment, readily healed.

Several times during the course of the disease I thought it would be necessary to operate on the mastoid, and was only deterred from so doing by the free discharge of pus from the tympanum and the gradual subsidence of distressing symptoms. Possibly such a procedure would have hastened the cure. Another patient with discharge from the tympanum, followed by a sinus discharging on the wall of the auditory canal, in which I presume there was limited involvement of the bone, recovered without an operation.

While agreeing with Dr. Randall that these cases may get well in time by attention to cleanliness, tonic treatment, etc., it nevertheless seems to me better, and perfectly safe when the nature of the trouble is fully ascertained, to scrape away all the offending bone possible and thus secure free drainage, and at the same time assist nature in her efforts to throw off useless and offending material. By such a course the duration of treatment may, in many cases, be greatly abbreviated. The chief objections, however, are the difficulty of deciding beforehand to what extent the carious process has reached, and the danger of undue reaction closing the canal and relighting deep-seated inflammation of surrounding parts.

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A CASE OF PALSY OF THE DELTOID MUSCLE CAUSED BY PRESSURE UPON THE CIRCUMFLEX NERVE.

In the University Medical Magazine for July, 1889, the writer reported three cases of pressure palsy occurring in muscles not usually involved—viz., one of the muscles supplied by the ulnar nerve, another of those supplied by the external popliteal, and the third of those muscles deriving their innervation from the anterior tibial. To these I wish to add a fourth, *i. e.*, of a palsy due to pressure upon the circumflex nerve.

In the literature bearing upon the subject no mention of a similar case could be found, and Prof. Wood remarked, when showing the case to the class, "that it was the only case of the kind which he had ever seen." This alone is a sufficient guarantee of its rarity.

The history of the patient is briefly as follows:

T. T., aged 40, single, and a blacksmith by occupation, came to the Nervous Dispensary complaining that four weeks before, after drinking heavily all day, he went to bed and on awakening the following morning found that "he could not lift his left arm above his head."

On examination it was found that the patient could elevate the arm only to a very slight degree in any direction. All other movements could be performed without difficulty. The deltoid was flabby and reactions of degeneration were present. There was no pain and no tenderness on pressure over any of the nerve trunks; sensation was not affected.

Under the use of strychnia and galvanism he made a good recovery in a few weeks.

As to the cause of this palsy, it is probable that he laid upon his back so close to the side of the bed that the edge of the sideboard exerted continuous pressure upon the circumflex nerve where it winds posteriorly around the neck of the humerus.

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CLINICAL DEPARTMENT.

UNIVERSITY HOSPITAL.

[Service of Dr. J. WILLIAM WHITE.]

SCROFULOUS GLANDULAR ENLARGEMENTS.

THE exact nature of the process termed "scrofulous" long remained a matter of uncertainty, although we were entertained with many theories as to its nature. Since Cohnheim promulgated the view that the morbid conditions found in scrofulous and tubercular processes were the same, evidence in support of this has been constantly added, and the identity of the pathological changes in scrofulosis and tuberculosis seems definitely proven.

The histology of the lesions is strikingly similar; the bacillus tuberculosis is frequently found in scrofulous products, and pure cultures from this source display all the peculiarities of those derived from true tubercular products. Animals inoculated with scrofulous matter develop tuberculosis. Finally, although nothing is known of the composition of Koch's remedy, and we can only speculate as to the manner of its action, it is a matter of common observation with those who have used it that when administered to patients suffering from scrofulous gland disease, decided local as well as general reaction occurs.

Clinically the intimate association of scrofula and tuberculosis has been observed by all. The scrofulous gland is therefore a manifestation of one extreme of a process of which miliary tuberculosis is the other. Traumatism frequently determines scrofulous gland disease as in Cases II, IV and IX. At other times no cause can be assigned, although the vulnerability of the tissues of the scrofulous subject is very pronounced and the power of resistance weak. Causes, therefore, which escape notice, may kindle the process.

In case of disease of the cervical glands, inflammations or other affections of the tonsils fauces or pharynx, carious teeth, middle ear disease or eczema of the scalp may lie at the bottom of the trouble.

The condition is much more frequently seen in the young, but all ages are numbered among its victims.

From the cases that have applied for treatment, the following have been selected as illustrating some of the types of the affection:

CASE I.—Male, aged 9 years; colored. Right cervical glands involved; tumor about the size of a hen s egg; painless and movable; duration fifteen months. Glands excised.

CASE II.—Male, aged 37 years. Glands of popliteal space became enlarged about a year ago, following trauma upon the calf. The swelling suppurated and healed slowly, leaving the characteristic scar of this affection. A second mass also ulcerated, but did not heal. This was thoroughly curetted and dressed antiseptically. Healing of the ulcer followed. Patient's mother and one brother died of phthisis.

CASE III.—Male, aged 28 years; artist. Axillary glands enlarged. Moderately painful and movable; several months' duration, causing much discomfort and interfering with work. The mass was excised; some of the glands were found to be broken down.

CASE IV.—Male, aged 18 years. Family history discloses a tendency to lung troubles Five months ago patient had a boil on forearm; this was followed by the appearance of a small lump anterior to the condyle of the humerus. About four months later the tumor suppurated, leaving a punched out, indurated ulcer. This ulcer was well curetted and dressed antiseptically. Healing followed.

CASE V.—Female, aged 17 years. Painless and moderately fixed enlargement of cervical glands; of several months' duration. The glands, which were excised, were found closely adherent to the vessels of neck. The father and one brother of the patient died of phthisis.

CASE VI.—Female, aged 27 years; dressmaker. Enlarged glands at angle of jaw; duration eight months. On excision the gland was found to be in a suppurating condition. One brother in ill health from sequelæ of pneumonia.

CASE VII.—Female, aged 24 years. Three years ago she suffered from an enlargement on the left side of the neck below the angle of the jaw. This suppurated, healing after a long time. Several months ago the swelling returned. This swelling was excised. It was tightly adherent to the sheath of the carotid artery and to the submaxillary gland.

CASE VIII.—Female, aged 23 years. Left cervical glands markedly enlarged from the mastoid process to the clavicle. The individual nodules were painless and rather adherent. The swelling was of two years' duration. In excising these glands an incision six inches in length was necessary, and a most prolonged, careful and tedious dissection required. Both the anterior and posterior chains were involved. Two brothers and a paternal uncle of the patient died of phthisis.

CASE IX.—Male, aged 19 years. On both sides of the neck were nodulated, slightly fixed, painless tumors, varying in size from that of a chestnut to that of a pigeon's egg. These tumors followed traumatism inflicted two months before the patient came under observation. Excision advised. One brother and one sister died of phthisis.

CASE X.—Male, aged 19 years. Tumor as large as a walnut behind the ramus of the jaw. It caused discomfort, but was not painful. It was of several weeks' duration. Excised.

The diagnosis of tubercular adenitis is usually not difficult; it must be distinguished from simple inflammation or adenitis on one hand, and hypertrophy or lymphadenoma on the other.

In simple adenitis the disease is acute, the gland is hard, painful and tender, and there is generally redness of the surface. The trouble is of short duration, and often a definite cause can be ascribed.

In lymphadenoma the patient is anæmic, the glands are soft, very movable, rounded, regular and present neither the pain nor other phenomena of inflammation. Glandular enlargements are multiple, and the spleen is also increased in size.

Scrofulous glands occupy a position midway between simple adenitis and lymphadenomata or lymphomata, in regard to the pain, the fixation and the distinctness with which the gland can be outlined. The condition is essentially chronic. Some exciting cause may be found; the glands frequently suppurate, leaving depressed, disfiguring scars. The patient may look strumous, be subject to catarrhal troubles, or have a phthisical history.

The subjects of this disease frequently display a faulty constitution, with poor circulation, evidenced by cold extremities and livid finger-tips. In these general tonics are demanded. Cod-liver oil is very serviceable. Iron, quinine and arsenic are also useful. The syrup of the iodide of iron is given to the limit of toleration in many cases in this service. Fresh air, sunshine, bathing,

sponging and rubbing are to be advised, and for those who are so situated prolonged visits to seaside resorts.

The local treatment must vary with the case. Any focus of disease keeping up irritation of the gland should be removed. Rest, as in cases of inflammation elsewhere, is to be enjoined. Local applications are frequently of no benefit. Tincture of iodine is too irritating except in the most chronic cases. The compound iodine ointment or iodide of lead ointment answers better, and either of these may be tried.

When to an inflamed gland the scrofulous element has been added, it then passes from the domain of therapeutics to that of surgery, and every accessible scrofulous gland should be removed. Until this is done there is constant danger that new foci of disease may develop or general infection result. The time to operate is usually as soon as the diagnosis has been made. There would seem to be less probability of a recurrence if the glands are not actively enlarging at the time of operation. It is better to operate before suppuration has occurred, as the tumor can be more thoroughly removed; when hard they should be *cut* out and no fragment allowed to remain.

If the glands have already suppurated it becomes a question between excision or erasion; usually it is necessary to combine the two. All sinuses should be thoroughly curetted, and unhealthy skin must be sacrificed.

The prognosis, after excision of the glands, is good. A recurrence may occur, but many escape it. The operation itself cannot be held as a cause for enlargements which subsequently may appear. Of the cases detailed above, all made a rapid and satisfactory recovery.

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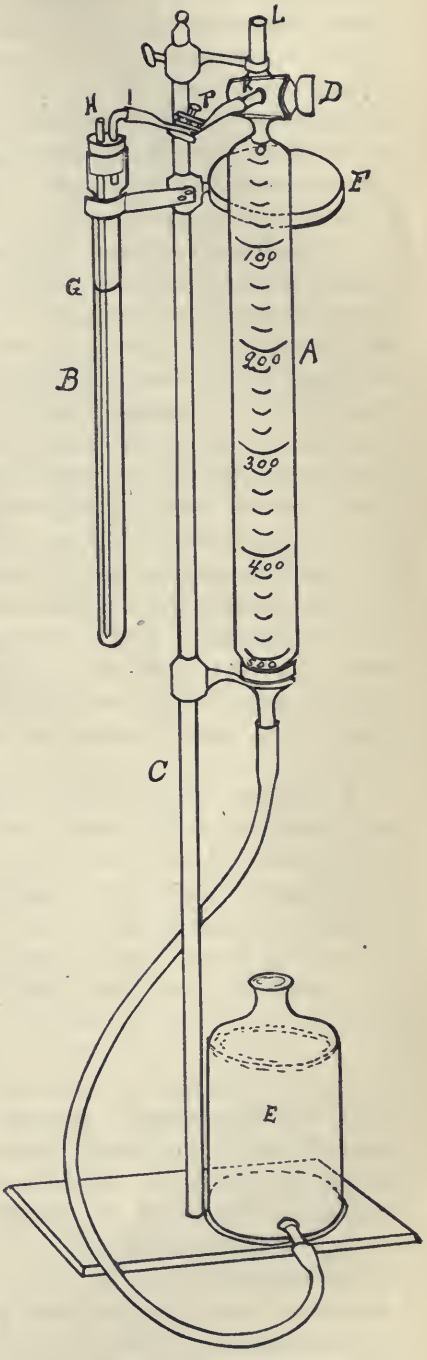
DEPARTMENT NOTES.

HYGIENE.

On the Determination of the Carbon Dioxide Present in Air.—Inasmuch as anything that tends to give us a better knowledge of the physical conditions surrounding our patients and the people in general is of importance in these days of scientific medicine, I have ventured to describe the apparatus recently suggested by Professor J. Rosenthal, of Erlangen, for the estimation of the carbon dioxide present in the air; and also to suggest a method by which any intelligent physician can quickly and with slight expense make an approximate determination of the same. The amount of this gas coming from the lungs and bodies of the occupants of a room being an index or measure of the organic impurities from the same sources, the value of being able to readily determine this without special skill or cumbersome and bulky apparatus is evident.

Rosenthal's method excels in these points. It consists simply of drawing the air to be examined through a given quantity of a milli-normal sodium carbonate solution, which requires a certain exact volume of carbon dioxide to neutralize it, and of then collecting and measuring the air thus deprived of its carbon dioxide. In the alkaline solution a small quantity of phenol phthaleine is used as an indicator, its color being destroyed as soon as the solution becomes the least acid. If, now, when this loss of color occurs, we can know the amount of air that has passed through the liquid, we can also know the percentage of carbon dioxide it contained, for of necessity it held the exact quantity of the gas that was required to neutralize the alkali.

For carrying out this method the apparatus shown in the cut has been devised.



It consists of a measuring cylinder, *A*, holding one-half litre, and graduated for every twenty cubic centimetres, and a tube *B*, about thirty centimetres long, for holding the alkaline solution. Both are suitably supported on the iron stand *C*. At the top of the cylinder *A*, is a three-way cock *D*, by means of which *A* communicates either with the outer air at *L*, or with the reagent tube *B* through *K* and the bent tube *I*. At the bottom *A* is connected by a piece of rubber tubing of suitable length with the flask *E*, which holds about one litre and has a lateral tubulure below. The tube *B* is closed with a rubber cork carrying the short bent tube *I* and *H*, a long thermometer-tube with capillary opening reaching almost to the bottom of *B*. The mark *G* indicates the amount of solution to be used, viz., twenty cubic centimetres. The screw pinch-cock *P* regulates the flow of air through the soda solution. *F* is a movable shelf, on which the flask *E* rests while filling *A*.

To put the apparatus in operation the tube *B* is filled to the mark *G* with the

colored soda solution, the cork is inserted and I connected to K by means of a short piece of rubber tubing, on which is the pinch-cock P. The flask E is then filled with water and elevated to F, thus allowing the water to flow through the tubulure and rubber tubing to fill A. Care must be had at this time that the three-way cock D is so turned as to discharge the air from A through L, and not through K. To insure against any air being forced back into the liquid in B, the pinch-cock had best be tightly closed. When A is filled the height of the shelf F is so adjusted that the water level is just at the zero mark in A. If, now, the cock at D be turned so as to draw air through K, and not through L, and E be lowered to its original position, when P is opened the water in A will begin to run back into E and air to pass through H into the soda solution and up through I and K into A. The pinch-cock P must be opened only enough to let the air pass up slowly and in very small bubbles through the reagent, thus facilitating the absorption of the carbon dioxide. Should the soda solution not be decolorized by the time A is emptied to the 500 c.c. mark, D is again turned, A refilled from E and the process thus repeated until the fluid when seen from above appears colorless, record being kept of the number of times A is emptied, so that the exact amount of air drawn may be known.

It has been found by experiment that it requires just *three* cubic centimetres of carbon dioxide to neutralize the alkalinity and decolorize twenty cubic centimetres of a milli-normal solution prepared in the manner described below. Consequently, the quantity of air used being known, the percentage of carbon dioxide will be equal to three, (the number of c.c. of CO_2 needed to neutralize the alkali) divided by the number of c.c. of air used and multiplied by 100.

From control tests by Pettenkofer's method, it has been shown that the results obtained by this apparatus "are so nearly in accord with the true value that wherever a rapid analysis is required, especially for all hygienic examinations, it can be determined by this means with advantage." Its portability and the ease and rapidity with which it can be set up and operated especially commend the apparatus for use in examining the air of schools, hospitals, factories, etc. As will be seen by reference to the cut, the various parts can be readily separated and the whole packed in a compact case for carrying from place to place.

The alkaline solution is prepared as follows: 5.3 grm. of dry sodium carbonate, free from water of crystallization, and 1 grm. of phenol phthaleine are dissolved in nearly a litre of distilled water, (which has been previously boiled to drive off the carbon dioxide) and after cooling brought up to 1 litre by the addition of more boiled and distilled water. This deci-normal solution must be kept in a well-stoppered flask. A fresh milli-normal solution is made each time that the apparatus is to be used by diluting 10 c.c. of this stock deci-normal solution to 1 litre with previously boiled and cooled distilled water, the quantity thus prepared being sufficient for fifty successive tests. The milli-normal solution should be made fresh for each series of tests, as it absorbs enough acid from the air to destroy its alkalinity if allowed to stand for any length of time.

For the use of the physician who wishes to make an estimation of the carbon

dioxide in the atmosphere of a locality, but has not the time nor opportunity to secure or arrange apparatus similar to the above, I would suggest that the following approximate method be employed:

Of the milli-normal solution described above, twenty cubic centimetres require just three cubic centimetres of carbon dioxide to destroy the alkalinity and decolorize it; consequently, each cubic centimetre of solution decolorized will indicate 0.15 c.c. carbon dioxide. If, now, we take a clean glass jar, preferably a wide-mouthed one, holding at least a litre, and after determining its capacity in cubic centimetres, introduce into it one cubic centimetre of the solution at a time, shaking the jar after each addition, the number of cubic centimetres of the solution decolorized multiplied by 0.15 will represent the number of cubic centimetres of carbon dioxide present in the air in the jar; provided we prevent the entrance or escape of air during the process. This can be done by stoppering the jar with a perforated rubber cork, the perforation being just large enough to admit the nozzle of a 1 c.c. pipette, from which we run in the milli-normal soda solution, and being closed during the shaking by a piece of glass rod. In this way but little air will escape from the jar while the solution is being introduced. A mark must also be made on the neck of the jar, to which the lower end of the rubber cork is brought each time, thus keeping the capacity always the same. Then, if we proceed as I have suggested, we shall have

$$\frac{\text{the no. c.c. of solution decolorized} \times 0.15 \times 100}{\text{the capacity of jar in c.c.}}$$

equal to the percentage of carbon dioxide in the air tested.

This method seems to me to be preferable to the minimetric test devised by Angus Smith, and described in his book on "Air and Rain," in that the color reaction of the phenol phthaleine in the soda solution is much more delicate and exact than the turbidity caused in the uncertain lime or baryta solution, and in that only one jar is used instead of several. Moreover, the much greater capacity of the larger jar decreases the liability to error and increases the accuracy of the result In reality, the quantity of liquid used should be subtracted from the air capacity of the jar before dividing in the above formula, since almost as much air is forced out of the jar as there is liquid introduced; but some air is absorbed by the liquid during the shaking, and what does escape is so little in comparison with what remains in the jar that it may be disregarded.

The jar may be filled with the air of a room or locality by filling it first with water and then emptying it in the room or place. The air taking the place of the water, we can either make the test at once, or by closely stoppering the jar, remove it and test at our convenience.

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EDITORIAL.

CLINICAL RESULTS OF THE KOCH TREATMENT OF TUBERCULOSIS.

CLINICAL reports upon the effect of Koch's remedy are now becoming so numerous that it is impossible to follow them all, still from the rapidly increasing number of facts at our disposal no definite conclusions can as yet be drawn. Koch's observations have been everywhere abundantly confirmed, with one exception. This one exception, however, happens to be the vital point of the whole question. It relates to the curability of tubercular processes. Time and patient trial can alone settle this question, and even though relapses in patients apparently cured are reported, it is yet too early to decide for or against the possibility of permanent cure.

That the remedy is dangerous is unfortunately attested by the death of a number of patients who have received the injections. On the authority of *L'Union Médical*, by the early part of December eleven patients had already perished in Berlin from the treatment. Others were for brief periods dangerously ill. Though most of the fatalities occurred in the persons of those affected with advanced pulmonary disease, at least one case of surgical disease died, and after an exceedingly weak injection.

Hensch (*Deutsche med. Woch.*, Dec. 11, 1890) administered to a child, aged two and a-half years, in the third stage of tubercular meningitis, four doses of the remedy (.0003 c. c. to .0007 c. c.). The child died in coma, having exhibited no sign of amelioration. Nor did the autopsy show any favorable changes in the tubercular areas. There was an enormous increase of intracranial pressure, from which the author concludes that in brain tuberculosis the Koch treatment is positively contraindicated.

Jarisch (*Wien. klin. Woch.*, Dec. 11, 1890) lost a patient suffering from lupus thirty-six hours after an injection of .002 c. c. of the remedy. The autopsy showed numerous foci of pneumonic inflammation in both lungs, together with marked œdema. There was also œdema of the brain and cord, with capillary hemorrhages of the latter.

Kaposi (*Wien. klin. Woch.*, Dec. 11, 1890) states that for diagnostic purposes Koch's material is of value only when the proper dose for each individual is determined. Thus there are certain healthy persons, and also certain ones affected with epithelioma, who exhibit marked reaction after injection. In one case of sarcoma of the pharynx and another of syphilitic ulceration, after injections there was marked local reaction. Among the lupus cases there were some who in spite of two days interval between the injections exhibited alarming symptoms, such as violent cough, hæmoptysis, prolonged syncope, oppression, obstinate vomiting and peptonuria.

Cornil (*L'Union Méd.*, Dec. 23, 1890) notes temporary albuminuria and hæmaturia after injections. Yet he holds that kidney disease is in itself no contraindication to the treatment, since in one case of long-standing pyelonephritis, the urine showed no alteration after administration of the remedy. One lupus case exhibited a subnormal temperature after treatment, although lupus areas showed the typical local reaction.

Hénocque finds that there is commonly a diminution in the oxyhæmoglobin demonstrable in from one to three days following the injection, and becoming more marked as the injections are repeated. This may serve as a means of determining whether or not the injections are doing harm, and a very decided diminution in oxyhæmoglobin should lead the physician to proceed slowly and carefully with the treatment.

Cornil, while granting that the injections may be of service in lupus, in laryngeal tuberculosis and in tubercular diseases of the bones and articulations, states that in pulmonary consumption but little can be hoped from them except in those cases characterized by a slow apyretic course and exhibiting but slight local reaction.

Baratoux (*La Pratique Méd.*) states that laryngeal tuberculosis is at times greatly aggravated by the Koch injection, and cites cases which he has seen where a latent trouble became suddenly converted into a virulent ulcerative inflammation.

Lindner (*Deutsche med. Zeit.*, XI, Jahrg., No. 100) never observed a general reaction without a local reaction, though the latter was at times so slight as to escape casual notice. The general reaction was at times absent, even though local inflammatory signs were marked. Frequently there was no reac-

tion upon administration of the first doses, which were always small. As the dose was increased in strength a local reaction would first appear.

Certain cases were observed where, in spite of total absence of reaction, there was decided betterment of the patient's condition. Women and children are more susceptible to the effects of the remedy than men. In children diarrhœa is sometimes caused by the injections; this is usually temporary, lasting not over a single day.

One case treated by Lindner for the cure of caries progressed satisfactorily till the fourth injection, when the respirations ran up to 96. There was violent cough, great præcordial distress and every sign of impending dissolution. There were no marked thoracic physical signs. The patient recovered, but again exhibited alarming symptoms on injection of .002 c.c. of the Koch material.

Fränkel states that when the pulse becomes more frequent than 120 to the minute, and when the breathing becomes rapid and embarrassed after injection, the remedy must be used with very great caution. Cases react very differently to the remedy. In some undoubted phthisics there is absolutely no effect produced; in others there is moderate reaction, while in the third class the typical symptoms described by Koch are observed. At times fever is developed very quickly; again, it does not appear for twenty-four hours.

Jaksch insists upon the great diagnostic value of Koch's remedy, though in some of his cases the characteristic effects were produced only after several injections.

Korány (Budapest) administered to a consumptive diabetic four injections. The first (.001 c.c.) was followed by reaction; the second (.002 c.c.) was followed by moderate reaction and great diminution in the excreted sugar; the third and fourth resulted in so much crippling of the heart that the treatment was not repeated on the fifth day. On the sixth day the patient died. The lungs were markedly œdematous, and about the tubercular foci were the inflammatory changes characteristic of the effect of the treatment.

The majority of patients treated by Korány and Kétli showed no reaction to the remedy. In one case an abrasion of the larynx was converted to an ulcer and all symptoms were much aggravated. Stiller also failed to produce the reaction, particularly in one undoubted phthisical patient, to whom was administered .018 c.c. of the remedy at a dose. A non-tubercular patient reacted violently after the administration of .01 c.c.

Thibierge reported to the Medical Society of the Hospitals of Paris, as a result of his visit to Berlin, that he had not seen a single case in which the lesions of the tubercular disease were not present, even lupus patients who had been treated from the time the remedy was first used exhibiting on careful inspection the characteristic appearance of the still active disease.

Uckermann (*Deutsche med. Zeit.*, No. 100, 1890) calls attention to the dangers of the remedy, and states that he was able to find no striking beneficial results from a careful study of the cases of Bergmann, Levy and Krause.

Dujardin-Beaumetz and Ley (*Bull. gén. de Therapeut.*, 15 Dec., 1890) confirm the statement that small doses of the remedy frequently fail to excite reaciton in phthisical patients.

Cornil (*Le Progrés Médical*, Dec. 13, 1890) believes that small doses are most serviceable in effecting cure, since by means of these inflammatory changes are produced which, by the subsequent organization of the plastic exudate into fibrous tissues, protect the healthy tissues from infected areas. The material seems to produce a decided weakening of vital forces. Its effect upon body-weight has not yet been determined.

Edson (*Medical Record*, Dec. 27, 1890) states that in Berlin the ordinary hypodermic syringe is generally used for the purpose of administering the injections. In his examination of the Berlin patients, the cases exhibiting tubercular lesions of the joints seemed to exhibit most marked improvement. The beneficial effects of the injection upon tubercular arthritis are evidenced by the testimony of many investigators.

Virchow (*Medical News*, January 17, 1890), exhibited specimens from over twenty-five patients from autopsies of patients treated by the Koch method. In a case of tubercular arachnitis there was intense hyperæmia. No sign of retrogressive metamorphosis of the tubercles could be found. The walls of old cavities in the lungs exhibited redness of the granulations and recent hemorrhages. The injections set up in internal organs acute inflammation and active proliferation, particularly noticeable in the edges of tuberculous ulcers and neighboring lymphatic glands. A condition of leucocytosis is established. The changes of the lungs consist in caseous hepatization associated with pneumonia of a catarrhal type. "The most important effect observed, however, was an eruption of fresh crops of tubercles after injections," occurring especially in the pleura, pericardium and peritoneum. Cases occur in which large masses of tubercles are absolutely unaffected by injection. In the same journal a special cablegram from Berlin is published summarizing Koch's announcement of the preparation of his remedy. In brief, it consists of a glycerine extract of a pure culture of the tubercle bacilli. Although it is probably a derivative from the albuminous bodies, it is not a toxalbumin, since it is not affected by high temperatures. As to the constitution of the active principle, Koch makes no suggestion. The quantity of the principle present in the extract is estimated at a fraction of one per cent.

In America the few institutions which have had the good fortune to secure a supply of the injection material have proceeded with praiseworthy caution. It is undoubtedly true that more value is attached to human life here than is the case in Germany; hence, though we have not yet been able to show the violent reactions characteristic of the cases reported abroad, *per contra* there have been no cases of death to record directly traceable to the inoculations. The beginning dose in all cases is usually from .0005 c.c. to .001 c.c., and ample time is allowed for the patient to fully recover from the effects of each injection.

It is interesting to note that the publication of Koch's paper has brought to light many curious experiments, conducted with the idea of securing immunity against tuberculosis. Thus Héricourt and Richet announce that transfusion of the blood of an animal not susceptible to tubercular disease (dog), into the circulation of a susceptible animal (rabbit), enables the latter to resist infection. Reuter has shown that artisans who handle cyanide of gold are

rarely affected by tubercular diseases, and that some already consumptive who come under the influence of this chemical are cured. Graucher and Martin have discovered an agent which seems potent to arrest inoculation-tuberculosis in rabbits. Pie, finding the Koch material analogous in composition to a culture bouillon containing toxalbumines, proposes to study the action of filtered cultures of streptococcus erysipelatis upon tubercular processes, since the influence of erysipelas upon the evolution of lupus, tubercular adenitis and tubercular pleurisy has received abundant clinical confirmation. Dor and Curmont have isolated by filtration a soluble vaccine from cultures of tubercle bacilli, the effect of which persists for several months.

Dixon (*Medical News*, Jan. 17, 1890) submitted tubes containing odd forms of tubercle bacilli to the action of ether, and also to a saturated solution of sodium chloride, after which the respective mixtures were filtered. Injections of this filtrate caused local and general reaction similar to that produced by the injection of Koch's material.

From the vast mass of apparently contradictory evidence now before the profession, it would seem certain that Koch's injections produce in tubercular cases marked local changes of an acute inflammatory character, and that there is coincident with these changes a general condition of temporary septicæmia. Beyond this little can be said positively. It has long been known that a high grade of local inflammation, excited either by trauma or by chemical agents, may arrest the development of a tubercular lesion, and that nature herself frequently brings about cure by a similar process. Whether Koch's material will prove more potent than the many means already in the hands of the surgeon remains to be proven.

The varying results of injections would suggest either that the material is not of certain definite composition and known strength, or that the element of individuality is one of major importance. In favor of the former theory is the statement quoted by the *Medical and Surgical Reporter* from the *Berlin klin. Woch.*, Dec. 8, 1890, to the effect that the composition of the remedy is kept secret by the government because Koch "is not able to give so exact a description of his process as to ensure the preparation of an efficient remedy."

In so far as reported cases are reliable, it seems to be well established that Koch's injection, even when given in minimum doses, may result fatally, and that large doses should never be administered even in surgical cases till the constitutional effect of minute quantities of the remedy has been tested in each individual case.

It also seems clear that certain tubercular cases show no characteristic reaction after injection, while such reaction, both local and general, may be marked in certain non-tubercular cases. Diarrhœa, jaundice, skin eruptions, albuminuria, hæmaturia, hæmoptysis and heart failure, have been noted as resulting from the Koch treatment; œdema of the brain and lungs have been observed on the autopsy table, and occasionally a slowly developing disease has been stimulated into the most active form of the malady.

No potent remedy is without its dangers, and those enumerated are as nothing compared to the benefits which those most skilled and experienced in

the use of Koch's material still assert humanity will derive from this discovery. To advance as an adverse criticism the fact that there is not yet a single instance of definite and permanent cure under this treatment is absolutely unfair, since sufficient time has not yet elapsed to make this possible. The cases which have progressed more satisfactorily than by any other known treatment can be numbered by hundreds. Nor are cures, complete as far as careful examination goes, wanting. It is right that the dangers attendant on any form of treatment should be known that they may the more readily be avoided, but the existence of such dangers should not for an instant weigh against the concurrent favorable testimony of those best able to judge.

HALLUCINATIONS.

At an International Congress of Experimental Psychologists, held at Paris in 1889, it was determined to undertake a statistical inquiry into the nature and frequency of such phenomena as apparitions, voices heard when no one spoke, and touches felt when no one was near. Hallucinations the result of illness were to be excluded, and only such as occurred to persons showing no sign of mental or physical disorder were to be included in the list. In America the conduct of this inquiry was entrusted to Professor William James, of Harvard University, whose circular letter entitled "Census of Hallucinations," was printed in the Magazine (Vol. II, p. 569), and in England the same work was undertaken by Professor Henry Sidgwick, of Cambridge, who writes concerning the results thus far obtained in *The Independent* for December 25th, 1890.

The question submitted for answer reads as follows: "Have you ever, when completely awake, had a vivid impression of seeing or being touched by a living being or inanimate object, or of hearing a voice, which impression, so far as you could discover, was not due to any external or physical cause?"

Hallucinations are conveniently divided into two great groups: (1) Those which are "veridical" or "coincidental," and (2) those which are "non-coincidental," or "purely subjective." The former is best exemplified by the visions or other "warnings" of death, etc., of people at a distance. For instance, "the percipient apparently sees the clothed body of a human being occupying a portion of space which is, in fact, not so occupied; at the same time, it is, in a sense, a 'veridical,' or truth-telling impression, since it suggests that something remarkable is happening to the human being so seen, and it afterwards becomes known that something remarkable and unexpected did in fact happen to him at that time." The latter class comprises those apparitions which more or less readily may be attributed to a subjective origin, and are unconnected with any external event, either simultaneous or subsequent.

The committee thus far has received about seven thousand answers; their object is to increase the collection to fifty thousand before the next meeting of the Congress in 1892. Professor Sidgwick reports affirmative answers to the

question printed above from 11 per cent., or 727 out of 6,481, and particulars respecting the experiences from 606 people. The accounts received include 470 visual experiences, many of them vague and indefinite, and ninety-nine were percipients who believed their experiences to be "coincidental." As the most suitable class of clearly defined cases of coincidence is that of apparitions of dying persons recognized at the time, and as only a quarter of the ninety-nine coincidental experiences were visions occurring within twelve hours of the death of the person seen, and as it further was necessary to exclude certain instances where the coincidence was not clearly made out, the number is reduced to thirteen.. The 6,481 answers yielded ninety-seven examples of non-coincidental apparitions of living persons.

In summing up Professor Sidgwick says: "A proportion of thirteen apparitions within twelve hours of death, out of every 110 apparitions of living or dying people, would be very much beyond what chance would give. But the numbers are too small for us to rely on their giving us the true proportion. Another 6,000 people, taken at random, might be found to have seen fewer apparitions at the time of death, and a very few of the thirteen would make a very material difference in the proportion."

In regard to the character of the apparitions not representing living or dying persons, it may be said that the great majority (413 out of 472) were visual hallucinations of the human form; of these one-half were unrecognized, and of the remainder two-thirds were appearances of living people, and one-third appearances of people who had been dead for more than twelve hours. Hence, as Sidgwick points out, recognized apparitions of the dead are the least frequent of all human apparitions, a result in accord with previous inquiries made by the Society for Psychical Research.

This investigation is an important one, not only because it has been entrusted to truly scientific men who desire to obtain reliable information on a very interesting and very important psychological subject, but because in its prosecution many points, naturally the outcome of the mass of information that is being received, might receive closer study than hitherto has been accorded them. For example, much information could be acquired in regard to the seat of hallucinations, the relation which they bear to the sensory centres in the cerebral cortex, the value of the tests to prove the external presence of an apparent object, as well as those which show when the retina is and when it is not involved in a visual hallucination, and the relations of after-images to the matter of spectral illusions. It is true that all of these points have often been debated, but are none the less somewhat undetermined. Perhaps one of the most instructive investigations made on the subject is that by Dr. D. Hack Tuke (*Brain*, January, 1889), whose interesting communication on hallucinations and the subjective sensations of the sane, concludes, after a very painstaking research, that lateral pressure on the eyeball or looking through a multiplying lens never doubles an object unless it is actually external to the eye, hence either of these tests whether an alleged object is really external or only an hallucination is trustworthy; that the after-image of a luminous object is certainly on the retina, obscures or covers real objects, moves with the

motions of the eye, and is "projected" when the observer looks on the dark ground, hence, if a visual hallucination present the same characteristics as those just described, this certainly must involve the retina; that, on the contrary, if these characteristics are not present, then the visual hallucination is not on the retina, but is confined to the cortical centres, or perhaps extends to the sensorium, and may occur when there is complete blindness from disease of the optic nerves; that, finally, the discovery of the cortical sensory centres seems to explain certain cases of hallucination not of peripheral origin, whether their abnormal action be regarded as a primary one, or as secondary to that of higher cortical centres.

Again, further information might be added to that remarkable series of cases which have been investigated by Weir Mitchell (*Transactions of the College of Physicians of Philadelphia*, Vol. X, 1888), and by de Schweinitz (*Ibid.*, Vol. XI, 1889), where the ordinary prodromata of hemicrania were replaced by visual hallucinations of definite shapes, so real that in some instances the belief was induced on the part of the patient that a ghost had been seen. It is true that in these cases the apparitions were part of the phenomena which make up a case of migraine, or, at least, of violent headache, and in so far would probably be excluded from the statistical inquiry concerning which we have been writing, inasmuch as they belong to people the subject of a physical disorder. They are, however, not quite like similar phenomena so common in disease, nor should they be confounded with the so-called "number forms," the association in some people of color with sound, the phantasy of certain individuals to connect visualized pictures with words, or that form of vision which is a phantasmagoria, or the appearance of a crowd of phantoms hurrying past like men in a street, it may be in broad daylight, or more frequently in the dark. They are non-coincidental, or probably purely subjective, and in common with all hallucinations deserve study to add to the mass of information which is constantly collecting in regard to visual localization. Hence the study of hallucinations and unusual visual phenomena in the sane and the insane, in the diseased and the sound, as prodromes and as sequelæ, probably would lead to important discoveries; indeed, in cases of disease, at least three operations are on record in which the point of trephining was decided partly by the visual hallucinations which were symptoms of the disorder for which the operation was undertaken.

THE RATE OF DEVELOPMENT OF CATARACT.

EVERY practical ophthalmic surgeon sees large numbers of cases of incipient cataract presenting moderately good vision, and is confronted with the question whether the patient shall be told that he is thus afflicted, and if so told, what sort of a prognosis shall be rendered to him. It is well known that the rate of development of a cataract varies much in different individuals, and often years will elapse without any progress in the disease and without any material depreciation in vision. As an example of this may be quoted the instance of a woman, now in her seventy-sixth year, who twelve years ago was told that she had beginning cataracts. After the immediate depression the result of this information had passed away, she determined that, as she was doomed to a gradual loss of vision, she would not stint herself in eye use, but see all she could while sight lasted. She consequently read and sewed and painted to her heart's content, and to-day has materially unchanged visual acuity, and continues to use her eyes with the utmost freedom and with almost perfect comfort.

Mr. W. A. Brailey (*British Medical Journal*, December 27, 1890), who has investigated this subject, finds, excluding congenital and zonular forms of cataract, as well as those which are secondary to other causes, whether local or general, that 7 per cent. of the total cases seen in his private practice were found to have some degree of opacity of the lens. From the examination of patients with immature cataract that he had investigated a second time within the last two years, he found that 45 per cent. remained unchanged for the worse. The intervals between his examination and reëxamination varied between three months and eight years. Four cases had slightly improved in vision; consequently, 58 per cent. showed no deterioration of sight. Twenty-three per cent. had grown worse, including four cases in which the cataract was sufficiently advanced to justify removal. His investigations further revealed to him that the cataracts which had remained stationary or improved were mainly of the cortical variety, characterized by the presence of striæ or fissures in the lens; those which grew slowly but steadily worse were nuclear. The patients presenting the cortical variety had at the onset and during the course of the trouble irritative symptoms, like conjunctivitis, photophobia, lachrymation, undue capillarity of the optic discs, asthenopic phenomena, etc. He concludes that senile nuclear cataract probably is a degenerative process, while the cortical form often exhibits the characters of an inflammation. The slight improvement which had appeared in some of the cases, as well as the delay in the progress, was attributed by Mr. Brailey and by several of those who took part in the discussion of his paper, to hygienic precautions with regard to rest for the eyes, and attention to the general health.

The experiences just related are in accord with those of most practical ophthalmologists, and the readers of the MAGAZINE will recall the able paper on this subject by Dr. S. D. Risley (UNIVERSITY MEDICAL MAGAZINE, March,

1889), in which he dwelt upon the importance of treating incipient cataract, on the success of such treatment, and on the fact that one of the important elements in the production of lenticular opacity is the local pathological state which involves the interior of the eye itself, and hence not merely hygiene and rest are required, but careful correction of the refractive defects of the eye, and the exhibition of alteratives calculated to improve the nutrition of the coats of the eye and to remove the evidences of low grade choroidal change so common in this disorder.

The question whether patients with incipient cataract shall be forbidden to use their eyes necessarily must depend upon the state of the fundus oculi, just as the same question in relation to eyes unaffected by cataract is decided in a similar manner. If, however, after the correction of existing ametropia, careful attention to the general bodily health, sufficient rest and the exhibition of such alteratives as experience has shown to have a curative influence upon diseased states of the internal coats of the eye, have removed the irritative symptoms previously existing, we believe, within reasonable limits, that these patients should be permitted to use their eyes, and we believe, with Mr. McHardy, that evidence is wanting that such use of the eyes hastens the maturation of cataract.

BOOK NOTICES.

THE MICRO-ORGANISMS OF THE HUMAN MOUTH. By WILLOUGHBY D. MILLER, D.D.S., M.D., Professor at the University of Berlin. Philadelphia: The S. S. White Dental Manufacturing Co., 1890.

The rapid advance which the last few years has witnessed in the extension of our knowledge regarding micro-organisms, as well as in the increased accuracy of our means of investigating the cause of disease, are emphasized by the appearance of books such as the one before us.

While in many respects appealing directly to the specialist, the relations of the micro-organisms found in the oral cavity are so intimate and important to certain conditions that the subject cannot fail to interest the practitioner of general medicine. Equipped by extended experience in this especial subject, the author presents not only a systematic *résumé* of this field of bacteriology, but adds much of value as the results of personal research and observation.

The first hundred pages, comprising four chapters, are devoted to a concise, clear and systematic description of the morphology and biology of bacteria in general, and of the nutrient media, methods of study, and the morphology and biology of the special forms found in the mouth.

Illustrative of the favorable conditions of the oral cavity as a nursery for micro-organisms, the author states that, within the last few years, he has isolated more than one hundred different kinds of bacteria from the juices and deposits in the mouth. The presence of many of these was, of course, accidental and transient; as mouth-bacteria proper—almost invariably present in every mouth—six forms are mentioned: 1, Leptothrix innominata; 2, Bacillus buccalis maximus; 3, Leptothrix buccalis maxima; 4, Iodococcus vaginatus; 5, Spirillum sputigenum; 6, Spirochœte dentium.

After a description of other less frequent forms, embracing some cultivable, of doubtful pathogenesis, and the chromogenic mouth-bacteria, follows the consideration of that interesting topic, the bacteria as exciters of fermentation, including their action upon carbohydrates, albuminous substances, fats and fatty acids, and nitrification and denitrification.

The next four chapters, giving in detail the various theories, original investigations, etiology and prophylaxis regarding dental caries, are of particular interest to the specialist. The inflammation theory of decay, as advocated by Heitzmann and Bœdecker and by Abbott, is discussed by the author, who arrives at conclusions by no means confirmatory of the assertions of these gentlemen.

The pages containing the original investigations regarding dental caries are illustrated by a number of interesting and suggestive drawings, together with four very satisfactory photomicrographs of micro-organisms within decayed dentine. A number of hints as to special microscopical technique are given, which will be useful to those desiring to undertake similar lines of investigation.

Dental decay is regarded as a chemico-parasitical process consisting of two distinctly marked stages; decalcification of the tissues by acids formed within the mouth, and dissolution of the softened tissue by bacteria. Starch and amylaceous substances are considered more detrimental than sugar to the teeth, as favoring the production of destructive acid secretions. Six kinds of bacteria directly engaged in dissolution of the dentine have been described.

In Part II the various pathogenic bacteria occurring in the human mouth are described in detail. To this list the author has added four new organisms. The diseases caused by these pathogenic bacteria are considered under six heads, according to the point of entrance of the infection; these are:

1. Infections caused by breach in continuity of the mucous membrane.
2. Infection through medium of gangrenous tooth-pulps.
3. Disturbances by resorption of poisonous waste products formed by bacteria.
4. Pulmonary disease caused by inspiration of particles of slime, small pieces of tartar, etc., containing bacteria.
5. Excessive fermentation processes, and other complaints of digestive tract, caused by the continued swallowing of microbes and their poisonous products.
6. Infections of intact soft tissues of oral and pharyngeal cavities, whose power of resistance has been impaired.

Space forbids separate notice of the many points of practical interest found in discussions under these headings; suffice it to say that their perusal will well repay the general practitioner. In conclusion, we can but congratulate Prof. Miller on the production of an admirable book—one which will prove of lasting value not only to the thoughtful specialist for the thorough exposition of the pathology and indications for treatment in his particular domain, but likewise to those engaged in the broader fields of general medicine, on account of the many suggestive ideas offered for their appreciation.

A Hand-book of the Diseases of the Eye and Their Treatment. By Henry M. Swanzy, A.M., M.B., F.R.C.S.I. Third Edition. Philadelphia: P. Blakison, Sons & Co., 1890.

This excellent manual has undergone a thorough revision, and appears in its third edition. Numerous alterations are found everywhere through the book, the most important rearrangement being the incorporation of

"Diseases of the Uveal Tract, Affections of the Iris, Ciliary Body, Choroid and Sympathetic Ophthalmia," in one chapter.

The optical portion of the book is very good, being neither too technical nor too elementary; for it is just as great a fault in a work intended for students to make this, the most difficult portion of ophthalmology, so brief that it reads like a series of definitions unassociated with explanations sufficiently adequate for their comprehension.

In diseases of the conjunctiva Swanzy is of the opinion that follicular conjunctivitis has nothing to do with granular ophthalmia, and describes this, as Saemisch originally did, as an independent form of conjunctival disease. In like manner, croupous and diphtheritic conjunctivitis are sharply separated, a separation justified by a sufficient number of cases well established by their clinical differences.

No distinction is made among the various varieties of marginal blepharitis, all of them being classified under one or other of the types of eczema of the eyelid. In the very common affection chalazion, evacuation through a cutaneous incision is considered improper owing to the fact that more or less disfigurement from the scar would result. This certainly is not in accord with the experience of many operators, practically no scar remaining if a careful dissection is made, and in the types of external chalazia this is the most radical method of treatment.

In diseases of the lachrymal apparatus *lacrimal* is adopted as the orthography, while in the former editions the word was printed *lacrymal*. Swanzy has substituted for *dacruocystitis* the more usual spelling *dacryocystitis*.

The chapter on diseases of the cornea, as well as the deeper structures of the eye, is very satisfactory, and among the most readable portions of the book are the paragraphs devoted to cataract and its treatment. In regard to cataract extraction without iridectomy the author expresses himself with no uncertain sound when he says:

> With sentimental talk about "mutilation" of the iris I cannot pretend to sympathize. If the advocates of the method under discussion should find a means of insuring the eye against prolapse of the iris, the operation will be placed upon a different footing; but, until then, the procedure cannot, I think, be recommended.

As in former editions, a most admirable portion of this work is that devoted to the value of eye symptoms in the localization of focal cerebral disease, and the whole subject matter has been thoroughly revised, brought up to date and condensed in such a way as to make a most acceptable *résumé* of this important branch of medical science. Swanzy's chapter on the motions of the pupil in health and disease is the best summary of this subject in the English language, and the extended bibliography which accompanies it renders it possible for any one who desires to pursue the matter still further to consult all the valuable original monographs.

This excellent hand-book deserves every bit of the praise which it has received in previous editions, and which we know it will receive in this, and should be in the hands of every one who teaches students and who desires to see how really excellent an exposition of the facts of ophthalmology and the closely associated allied facts in neurology can be gathered together in a volume of less than five hundred pages.

A Manual and Atlas of Medical Ophthalmoscopy. By W. R. Gowers, M.D., F.R.S. Third Edition. Philadelphia: P. Blakiston, Son & Co., 1890.

Dr. Gowers' "Medical Ophthalmoscopy" is too well known to need any extended introduction here. The work is admirable in conception, in detail,

and in the rare judgment with which the vast amount of literature upon this subject has been gathered and analyzed. In the present edition the revision of the work having the advantage of the help of Mr. Marcus Gunn, has given additional weight to a volume that must always remain a medical classic.

The chief changes which have taken place, in addition to the constantly recurring additions and alterations which are scattered through the entire volume, are the substitution of phototype blocks in the text of the work in connection with the subjects to which they refer, for the microscopic figures that formerly appeared on photolithographic plates. Brief epitomes take the place of the extended description of cases which appeared in former editions, and the space thus gained has been utilized by adding a most acceptable chapter on the best method for drawing the appearances seen with the ophthalmoscope.

Dr. Gowers and his able assistant editor deserve the thanks and congratulations of every one interested in this study, and no one who truly is a thoughtful and scientific practitioner of medicine should fail to be interested in a subject fraught with important aids in the diagnosis of so many of the local and constitutional diseases to which the body is exposed.

SAUNDERS' POCKET MEDICAL LEXICON. Being a Dictionary of Words and Terms used in Medicine and Surgery. By JOHN M. KEATING, M.D., and HENRY HAMILTON.

This little vest-pocket lexicon of three hundred pages will, no doubt, meet the needs of the student, conveying as it does, in a most convenient form, the innumerable terms which occur in his everyday studies. Much valuable matter is added in comparative tables of metric and apothecaries' weights, a list of poisons and their antidotes, a table of the abbreviations used in medicine, and an exposition of the etymological factors common in medical terminology; thus by consulting the roots and affixes a clue will frequently be afforded to the construction and signification of a technical term.

THE PHYSICIANS' ALL-REQUISITE TIME AND LABOR-SAVING ACCOUNT BOOK. By WM. A. SEIBERT, M.D. Philadelphia: F. A. Davis, 1890.

This capacious and handsomely bound document should fill the fullest expectation of the medical man who will take pains to faithfully utilize the neither too elaborate nor too simple, yet complete record, for professional assets.

The plan, which requires inspection to be comprehended, consists of compact daily visits and office consultations marked on superimposed half-lines for an entire month, and thirteen of these to the year. The liberality in the matter of months strikes the observer at first as most commendable. Why this overfull provision is made is not clear, though, doubtless, there is a good reason, and a summary is provided for at the end of each month. Certainly the method to be pursued is an excellent one, as is also the "*Meaical Bulletin* Visiting List" which accompanies it.

This last is fitted out with the usual valuable memoranda, obstetric tables, dosage, etc. Even a copious list of suitable eye washes withal and other desirable data. The two constitute an ample recording equipment for any practitioner of reasonable demands.

A Compend of Human Anatomy, including the Anatomy of the Viscera. By Samuel O. L. Potter, M.A., M.D. Fifth Edition. Philadelphia: P. Blakiston, Son & Co., 1890.

This little compend, which is one of the best we have seen, has met with an unprecedented success. To the present edition has been added a new and valuable feature, consisting of sixteen lithographic plates, besides numerous tables of the cranial, spinal and sympathetic nervous systems.

While the author has endeavored to enlarge the scope and utility of the compend, he has neglected to correct errors that have existed throughout all previous editions. Thus we notice on page 35 mention is made of the entrance of the internal carotid artery into the skull by way of the middle lacerated foramen. This is anatomically incorrect, as the foramen is closed with cartilages in the recent state and only admits of the passage of the Vidian nerve. The internal carotid artery and carotid plexus enter the cranial cavity through a foramen of their own. Again, on page 105, we are told that the deep auricular artery is a branch, directly, of the internal maxillary artery. The arterial supply of the ear is obtained principally from three sources, the occipital, posterior auricular and temporal branches of the external carotid artery, although occasionally a small auricular branch is found supplying a portion of the pinna, having its origin from the tympanic branch of the internal maxillary artery. This small auricular branch is probably the one referred to by the author as the deep auricular branch of the internal maxillary artery. On page 190 we find the uterine artery described as a branch of the anterior trunk of the external iliac artery—purely a careless error, as the author is certainly cognizant of the fact that the external iliac artery has no part whatever in supplying the pelvic viscera with blood. Furthermore, the anterior trunk referred to as being the origin of the uterine artery, is a division of the internal and not the external iliac artery. These, as well as other errors which exist throughout the compend, should have received correction in a book which has reached its fifth edition.

A Text-Book of Comparative Physiology. For Students and Practitioners of Comparative (Veterinary) Medicine. By Wesley Mills, M.A., M.D., D.V.S. New York: D. Appleton & Co., 1890.

In the January, 1890, number of this Magazine we had the pleasure of reviewing a "Text-book on Animal Physiology" by the same author. Although Prof. Mills clearly leads us to believe, from his preface, that the present volume is distinct from the former, it is, nevertheless, essentially a reproduction *verbatim et literatim*, the chief differences being its smaller size, smaller type, fewer illustrations and the absence of the appendix on animal chemistry.

Progressive Exercises in Practical Chemistry. By Henry Leffmann, M.D., Ph.D., and William Beam, M.A. Philadelphia: P. Blakiston, Son & Co., 1890.

This little book of 104 pages contains an admirably arranged, progressive laboratory course for beginners in chemistry. By gradual stages and in easily understood language the student is carried from the simplest manipulations and facts easy of comprehension to those more difficult and trying. The experiments are well selected, the illustrations are good, and, taken all in all, the book is an excellent example of a good "primer in chemistry."

MISCELLANEOUS.

STATE BOARD OF MEDICAL EXAMINERS.

At a meeting of the State Medical Society at Pittsburg, in June last, a Committee on Medical Legislation, consisting of the presidents of the different county societies throughout the State, was appointed. This committee met at Harrisburg, September 17th, 1890, and, after consultation, appointed an Executive Committee of seven to draft a proper bill and present it to the meeting of the General Assembly in January next. This bill has been drawn and we inclose you a copy. As to the necessity of the passage of a law regulating the practice of medicine in this State, it is no longer necessary to argue: when we consider the fact that many of our sister States have adopted such laws, and that twenty per cent. of applicants for license before those Boards have failed, it must be patent to all that we receive more than our just proportion of those who are incompetent to practise medicine.

While the bill may not suit each individual member of our profession, it is, after due deliberation, thought to be the best that we could ask at this time, and we appeal to the members of our profession throughout this State to give it their support, and see to it that their individual influence is used with their representatives for its passage.

H. G. McCormick, *Chairman*, Lycoming.
W. S. Foster, *Secretary*, Allegheny.
J. F. Ross, Clarion.
J. W. Moore, Northampton.
W. T. Williams, Schuylkill.
S. L. Kurtz, Reading.
Executive Committee.

AN ACT

To regulate the Practice of Medicine and Surgery, to establish a State Board of Medical Examiners and Licensers, to define the powers and duties of such Board, the qualifications of applicants for license, the manner of licensing, and making an appropriation for said Board.

Whereas, The safety of the public is endangered by incompetent physicians and surgeons, and due regard for public health and the preservation of human life demands that none but competent and properly-qualified physicians and surgeons shall be allowed to practise their profession;

Section 1. Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by authority of the same, that within one month after the passage of this Act the Governor shall appoint a State Board of Medical Examiners and Licensers consisting of nine members, three to serve for one year, three for two years, and three for three years in the first instance, and thereafter annually the Governor shall appoint three members to serve for three years in place of those whose terms then expire. The said persons so appointed shall be graduates

of some legally-chartered college or university having the power to confer medical degrees, citizens of the United States and of this Commonwealth who shall have been in the active practice of medicine or surgery for a period of not less than ten years, but no two of whom shall be residents of the same county and none of whom shall be members of the faculty or staff of any medical school or university. Each member of the said Board shall receive a certificate of appointment from the Governor, and shall file the same within twenty days with the Prothonotary of the Court of Common Pleas of the county in which said member is registered under existing law.

SECT. 2. The said Board shall be known by the name and style of the State Board of Medical Examiners and Licensers of the Commonwealth of Pennsylvania, and shall have a common seal, and may make and adopt all necessary rules and regulations and by-laws not inconsistent with the Constitution and laws of this Commonwealth, or of the United States, and shall have power to locate and maintain an office within this State for the transaction of business. Five members of the said Board shall constitute a quorum for the transaction of business.

SECT. 3. Every appointment to fill a vacancy or vacancies in the said Board shall be for the unexpired term, and the said vacancy or vacancies shall be filled by the Governor within sixty days after notification of the same by the Board, and he shall have power to remove any member of said Board for criminal, scandalous, or dishonorable conduct.

SECT. 4. The said Board shall organize at Harrisburg within three months from the date of their appointment, and shall elect from its own number a President and Secretary who shall also act as Treasurer, both of whom shall hold their offices for one year, or until their successors are chosen.

SECT. 5. The members of the said Board shall each receive a salary not exceeding three hundred dollars per annum, to be paid out of the fees for examination. The Secretary and Treasurer shall receive an additional salary, to be fixed by the Board, and shall file with the President of the Board a bond in the sum of one thousand dollars, conditioned for the faithful performance of his duties. The necessary expenses of the said Board shall also be paid out of the fees, except as provided in Section 12 of this act, and any balance remaining from the fees, after the disbursements herein specified, shall be paid into the treasury of the Commonwealth.

SECT. 6. The said Board shall examine all applicants for license to practise medicine or surgery in this Commonwealth who are properly qualified according to the provisions of Section 7 of this Act, and no one shall be excluded or rejected on account of adherence to any special system or school of practice. It shall hold two stated meetings in each year, one at Pittsburg and one at Philadelphia respectively, and may hold special meetings at such times and places as it may deem proper. All examinations, when practicable, shall be conducted in writing, and all examination papers, together with the reports and action of the Examiners thereon, shall be preserved among the records of the said Board for a period of five years, during which time they shall remain open for inspection at the office of the said Board.

The applicants shall be examined in anatomy, physiology, chemistry, toxicology, pathology, hygiene, materia medica, and therapeutics, principles and practice of medicine, surgery, and obstetrics, and each applicant upon receiving from the Secretary of the Board an order for examination shall draw by lot a confidential number, which he or she shall place upon his or her examination paper, so that when said papers are passed upon by the Examiners the latter shall not know by what applicant said papers have been prepared, and upon each day of examination all candidates shall be given the same set of questions. Provided that any candidate for examination may elect the system of materia medica and therapeutics in which he or she shall be examined.

SECT. 7. Any person on paying twenty dollars to the Secretary of said Board, and on presenting satisfactory proof of being over twenty-one years of age, of good moral character, and of having received a sufficient preliminary education, as defined by said Board, and a diploma from some legally-incorporated medical college or university having authority to confer degrees in medicine, shall be entitled to examination by the said Board, and in case

of failure at any examination shall have the privilege of subsequent examinations without the payment of an additional fee. Each applicant who shall have passed a satisfactory examination shall receive from the said Board, under seal, a license to practise medicine and surgery in the Commonwealth of Pennsylvania, and the said Board may at its discretion grant licenses, without examination, to persons holding licenses from similarly-constituted boards of examiners or boards of health in other States.

SECT. 8. The Secretary shall record in a book to be kept for this purpose in the office of the said Board, the name, age, sex, residence, date, and place of examination, the examination number, the examination average on each branch, the general average, and date of issue of license, in case such license is granted. Said book shall be open to public inspection, and on or before the last day of December of each year the Board shall publish, or cause to be published, a list of the names and addresses of such persons as shall have received licenses from the said Board within twelve months immediately thereto preceding.

SECT. 9. After the first day of July, Anno Domini one thousand eight hundred and ninety-one, no person shall enter upon the practice of medicine or surgery in the State of Pennsylvania unless he or she has complied with the provisions of this Act, and shall have exhibited to the Prothonotary of the Court of Common Pleas of the county in which he or she desires to practise medicine or surgery, a license duly granted to him or her by the said State Board of Examiners and Licensers, whereupon he or she shall be entitled, upon payment of one dollar, to be duly registered in the office of the Prothonotary of the Court of Common Pleas in said county, and any person violating any of the provisions of this Act shall be guilty of a misdemeanor, and upon conviction thereof in the Court of Quarter Sessions of the county where the offence shall have been committed, shall pay a fine of not less than one hundred dollars nor more than five hundred dollars for each offense, one-half of which fine shall be paid to the prosecutor.

SECT. 10. Nothing in this Act shall apply to commissioned medical officers of the United States Army or Navy, or of the United States Marine Hospital Service, nor to any member of the house or resident staff of any legally-chartered medical college or university or hospital during his term of service therein, nor physicians of other States meeting duly registered physicians in this State in consultation, nor to those practising dentistry exclusively. And nothing in this Act shall be construed to prohibit the practice of medicine and surgery within this Commonwealth by any practitioner who shall have been duly registered before the first day of July, Anno Domini one thousand eight hundred and nine-one, according to the terms of the Act entitled "An Act to provide for the registration of all practitioners in medicine and surgery," approved the eighth day of June, Anno Domini one thousand eight hundred and eighty-one."

SECT. 11. For the purpose of this Act, the words "practice," "medicine," or "surgery" shall mean to treat, operate on, or prescribe for any physical ailment of another. But nothing in this Act shall be construed to prohibit service in cases of emergency or the domestic administration of family remedies.

SECT. 12. The sum of one thousand dollars, or so much thereof as may be necessary, is hereby appropriated to meet the necessary and legitimate expenses of the said Board for the year Anno Domini one thousand eight hundred and ninety-one.

SECT. 13. All Acts or parts of Acts of Assembly inconsistent herewith shall be and are hereby repealed.

THE MATTISON PRIZE.

With the object of advancing scientific study and settling a now mooted question, Dr. J. B. Mattison, of Brooklyn, offers a prize of $400 for the best paper on "Opium Addiction as Related to Renal Disease," based upon these queries :

Will the habitual use of opium, in any form, produce organic renal diease ?

If so, what lesion is most likely ?

What is the rationale ?

The contest is to be open for two years from December 1, 1890, to either sex, and any school or language.

The prize paper is to belong to the American Association for the Cure of Inebriety, and to be published in a New York medical journal, *Brooklyn Medical Journal* and *Journal of Inebriety.*

Other papers presented are to be published in some leading medical journal, as their authors may select.

All papers are to be in possession of the Chairman of Award Committee, on or before January 1, 1893.

The Committee of Award will consist of Dr. Alfred L. Loomis, president N. Y. Academy of Medicine,chairman; Drs. H. F. Formad, Philadelphia; Ezra H. Wilson, Brooklyn ; George F. Shrady, and Joseph H. Raymond, editor of the *Brooklyn Medical Journal.*

A FREE DISPENSARY FOR THE TREATMENT OF THE DISEASES OF WOMEN.

A dispensary for the treatment of the diseases of women amenable to electricity has been opened at 1632 Cherry St., Philadelphia, under the charge of Drs. G. Betton Massey and Horatio R. Bigelow. Physicians are invited to bring or send suitable cases on Mondays, Wednesdays or Fridays, at 3. P. M.

"THE NURSING RECORD."

It is announced that on and after Thursday, January 1, 1891, *The Nursing Record* will be issued at a reduced price (one penny per week), and commencing with the New Year it will contain several additional features of interest.

The reduction of price is with the view of bringing it within the reach of everyone associated with or interested in nursing work.

NEW APPOINTMENTS AT THE UNIVERSITY.

Dr. B. Alexander Randall, of the class of 1880, has been appointed Clinical Professor of Otology in the University, to succeed Dr. George Strawbridge, who resigned some months ago.

Dr. Randall is well and widely known as a skilful and scientific aurist. In addition to the large amount of clinical work which he is constantly performing, his studies in the normal and pathological anatomy of the ear, especially his beautiful atlas of photographic illustrations of morbid processes in this department of medicine, and his labors in "corrosion methods" are examples of the high standard which the subject of otology in the University will receive under his direction.

Dr. S. D. Risley has been appointed Lecturer on Ophthalmology in the University. Increased duties rendered it necessary for Dr. Risley to resign his position as assistant ophthalmic surgeon to the hospital and chief of the eye dispensary, but his acceptance of this new position fortunately secures for the students his valuable experience as a lecturer and clinician.

PERSONAL NOTES.

Dr. William G. Porter delivered the annual oration before the Philadelphia Academy of Surgery, January 5, 1891. His subject was "The Progress of Modern Surgery in Twenty-five Years."

Dr. M. Le Moyne Wills, of Los Angeles, California, at a meeting of the Medical Society of that city, held early in December, 1890, read an important paper on "Medical Legislation," urging strongly the passage of additional legislation in the matter of licensing persons to practise medicine and surgery.

Dr. L. Webster Fox has been appointed ophthalmic expert to the Board of Pension Examiners of the Philadelphia District.

Dr. Benjamin Lee, of Philadelphia, announces a course of lessons in massage and the simpler Swedish movements. Classes are limited to six, and the course, which began January 5, 1891, will extend over a period of two months.

Dr. G. Oram Ring has been appointed Ophthalmic and Aural Surgeon to the Episcopal Hospital in the place of Dr. B. Alexander Randall, who resigned a few weeks ago. Dr. Ring will also assist Dr. Risley in his service at Wills Hospital.

Drs. G. Betton Massey, Augustin H. Goelet and Horatio R. Bigelow announce the formation of an American Electro-Therapeutic Association, the first meeting for the organization of which met January 22, at the Academy of Medicine, New York.

CORRESPONDENCE.

A Question of Discovery and Nomenclature.

January 13, 1891.

To the Editors of the University Medical Magazine.

Gentlemen:—In the last issue of the Magazine you have an interesting editorial article upon the *Astigmatic Amblyopia* of Martin, and in the Journal of the American Medical Association of January 10, my esteemed colleague, Dr. de Schweinitz, incidentally speaks of "the low-grade retino-choroidal irritations so commonly present in ametropic eyes." In the excellent article of the talented author upon "Ophthalmoscopy" in Keating's Cyclopædia of the Diseases of Children, an article presumably giving an exhaustive account of the fundus-lesions of the eye, there is no allusion made to the influence of ametropia in producing a lesion I had described nearly a year previously (*Archives of Ophthalmology*, Vol. XIX, No. 1, 1890).

The slowness with which a foreign contribution penetrates the seclusion of French self-contentment may explain why Martin's article, published some eight months after my own, contains no reference to my work. I complain of no "conspiracy of silence," but I would frankly ask if Martin's "Astigmatic Amblyopia," in the light of my article, a copy of which I send you, is not a *single* symptom of *one* of the causes of a condition I had fully described under the name of *Ametropic Choroido-retinitis?* For two years or more prior to publishing my article I had been studying the effect of ametropia upon the macular region and upon vision, and in the past year I have been confirmed in my conclusions, having now nothing to add or retract from the same, as stated in the *Archives.* I there concluded that ametropia, "abnormalism of the light-stimulus" and insufficiency, and especially astigmatism of long standing—in a word, eye-strain, of a degree or at a time of life that the ciliary muscle could not easily neutralize, would, if long continued, induce chronic changes in the macular region, evidenced objectively by pigmentary abnormalities, and subjectively by subnormal visual acuity, retinal asthenopia and lessened reaction to weak light. Martin's study is highly interesting and confirmatory of my view, but is at last only a corollary of it. The last edition of Gower's "Ophthalmoscopy" appeared too near the same time as my article to contain any reference to this subject.

It is a common experience that a discovery may be repeatedly made many times after it had once and for all been first and previously made. So the world gets it, it matters little how or by whom it comes. The burden of my writing is that one should not stop at a "free-lunch counter" when going to a banquet, and that for some reason or other my article seems to be ignored, wherein the whole subject is systematized and established upon a broad basis of etiology and symptomatology. With respect, and thanking you for your courtesy,

I am, Sirs, etc.,

George M. Gould.

119 South 17th St., Philadelphia.

SUPPLEMENT.

WORK OF UNIVERSITY TUBERCULOSIS COMMISSION.

General Results in the Medical Wards.—The group of patients, about fifteen in number, who regularly are receiving inoculations for tuberculous disease of the lungs or larynx, in general terms are doing better and have presented fewer unfavorable symptoms than could be noted in a similar series of cases in the Hospital at this season under any other treatment. In one case particularly good results followed—cessation of cough and expectoration, diminution of the râles, and gain in body-weight (five pounds). On the other hand, several cases may be mentioned in whom, in spite of repeated inoculations followed by characteristic reaction, no improvement can be said to have resulted. One case under lymph treatment has died, although the injections were followed by the most moderate reaction. This man, however, was exceedingly weak on admission, and his debility steadily increased, in spite of rest and supporting treatment. Such a result occasionally must be inevitable in a disease presenting so many grave complications and unexpected developments. Another case with advanced lesions, watched with great anxiety, was slightly improved by the treatment.

The Commission, while it discountenances the lymph injection in cases with grave lesions, on the whole is favorable to the continued study of this treatment in early cases.

General Results in the Surgical Wards.—The cases of surgical tuberculosis treated by Koch's injection material were as follows:

1. Young woman. No tuberculosis in family. Cervical and axillary glands enlarged; slight cough; no demonstrable lung lesion.

2. Middle-aged man. Osteomyelitis involving nearly the whole shaft of the left femur. This patient received but a single small injection, from which there was no marked reaction. He was then subjected to operation.

3. Woman, past middle age. Cancer of breast, with extensive skin involvement. Three injections were given, and the patient was then discharged, no reaction having been excited.

4. Child. Tubercular family history. Enlarged sub-maxillary gland. Sidus.

5. Man, aged 59. No tubercular family history. Lesion on side of face; probably epitheliomatous.

6. Man, aged 62. Family history shows cancer, but not tuberculosis. Deep ulcer, which has destroyed the greater part of the left ear.

7. Man, aged 27. No tubercular family history. White swelling of left knee.

8. Man, aged 56. Erythematous lupus of nose and both cheeks. Huge fungous ulcer of right cheek.

9. Woman, aged 58. Ulceration destroying left half of nose and exposing nasal cavity; thickening of conjunctiva.

10. Man, aged 20 Tubercular infiltration of cervical and axillary glands.

11. Man, aged 28. Enlargement of testicles, probably syphilitic. Three injections were given to this patient, but no reaction, either local or general, was excited. The largest number of injections given to any one patient was thirteen; the first dose in this case was .0005 cc., administered December 17, 1890, the last .01 cc., January 21, 1891. The doses were increased in accordance with Koch's directions. This case was one of tubercular adenitis of the neck. Both local and general reaction followed each injection. The improvement in the local swelling was not marked. A cough, from which the patient suffered for several months, became very much aggravated after the first few injections. Subsequently this cough entirely disappeared. The patient has, since her admission to the hospital, gained two pounds in weight.

The case of lupus (No. 8) shows a marked improvement under the Koch treatment. Seven injections were given to this patient, beginning with .001 cc. and running up to .015 cc. The weaker injections produced a sense of pain and fulness about the ulcerating lesion of the face, but did not cause marked rise of temperature. As the dose was increased the local and general reaction became marked and typical, though the changes in the ulcer were not comparable with those reported from some of the German clinics, where the whole granulating surface sloughed. The lesion in this case seems to have undergone a favorable change, and cicatrization is progressing from the periphery of the ulcer.

The largest dose given was .05 cc. This was administered to patient No. 5, and excited no local or general reaction. This patient received in all six injections. There was at first marked general reaction to doses of .01 cc., and after one injection intense jaundice developed.

In two cases abdominal pains, followed by several watery evacuations, were noticed as reactionary fever was subsiding. On continuing the treatment these symptoms did not constantly recur.

It is noticeable, in studying the temperature charts, that reaction follows the injection at no constant time even in the same individual, while the difference in this respect between various patients is striking. In some cases the temperature began to rise in three to four hours; in others the first rise was noted in from eight to ten hours; again no rise was observed for from twenty to thirty hours.

The case of tubercular arthritis showed a very marked local reaction to an injection of .005 cc. All the symptoms of an acute arthritis were developed, and the patient experienced great distress from the starting pains which occurred every few minutes. Following the subsidence of acute symptoms there was slight diminution in the original swelling and lessened tenderness and fixation.

In general, the surgical cases treated by the Koch injection have shown a gain in weight, an improvement in condition, and where the lesion was tubercular some evidences of retrograde metamorphosis in the affected areas.

THE PULSE.—A study of the pulse of patients at the time of the reaction

following injections of Koch's remedy gives interesting and fairly uniform results. Sphygmographic tracings of the pulse were made in each case before treatment was begun, and these tracings were compared with those taken subsequently during successive reactions. The results of the comparison may be summarized as follows: The pulse during the period of reaction is increased in frequency and in volume, the duration of each beat it shortened, the tension is less, the force is probably diminished, dicrotism is in most cases increased, while the rhythm, for the most part, remains unaltered. The increased height of the upstroke which the tracings show is due to diminished arterio-capillary resistance and greater elasticity of the walls, and probably does not indicate any increase in the power of the heart.

Upper Air Passages.—The patients were taken without reference to any laryngeal complication. Several cases exhibited lowered nerve force, but there was only one of local tubercular infiltration. In all but one the well-defined pallor or cachectic condition showed itself. In several (4) after the injection there was inflammatory reaction, varying in severity, and associated with increased secretion; in the others the result was negative.

Blood and Urine.—In all cases where continued tests were made the hæmoglobin was found to diminish in percentage, the average loss being ten per cent. Those cases which seemed to be improving under the treatment and which had attained a certain degree of immunity to the agent, gradually regained the original percentage.

The study of the urine has shown a development of albuminuria in twelve out of twenty-one, or in more than one-half of the cases. Leucocytes have appeared in twelve out of twenty-one cases, showing that the albumin is probably due to this cause. Red blood corpuscles have been found in seven, or one-third of the cases. Hyaline and granular casts were noted in four, or about one-fifth of the cases. In two albumin and casts were observed before inoculations began.

Eyes.—No changes of importance have been observed with ophthalmoscope. In several cases there has been some injection of the posterior conjunctival vessels, and in one there was complaint of itching, with congestion, along the palpebral margins.

The bacteriological report, together with a full report upon the entire series of cases, will appear in a future number of the Magazine.

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ORIGINAL ARTICLES.

CARDIAC NERVE STORMS.[1]

Essential Tachycardia.

By H. C. Wood, M.D., LL.D.,

Professor of Therapeutics, and Clinical Professor of the Nervous System, University of Pennsylvania.

When, in response to the request of the Council of the Philadelphia Neurological Society to deliver an address at this meeting, I cast about me for some subject concerning which it was possible for me to say something that might be of interest to you, the only one which presented itself with any force was "Cardiac Nerve Storms." A search through the latest and fullest treatise upon nervous diseases in the English language, that of Professor Gowers, showed that it contained no allusion to any of the several affections which it was my thought to discuss, and emboldened me to call your attention to the matter.

In the present state of physiological knowledge it does not seem possible to form a definite, clear idea of the nature of a "nerve storm." It is, indeed, uncertain whether the sensory disturbance that accompanies a locomotor ataxia crisis, or a megrim, has anything common in its nature with the no less furious motor disturbance that manifests itself in an epileptic convulsion; it may be that the one is due to a negative condition of the nerve centre, whilst the other is the outcome of a positive, active state. However this may be, it is certain that the term "nerve storm" suffices well, for the purpose of the clinician, to designate a great, sudden disturbance of the nervous system, either sensory or motor, which comes and goes like a tempest in the larger world about us.

[1] Address before the Philadelphia Neurological Society, January 18, 1891.

For the study of their clinical aspects, cardiac nerve storms may be divided into those which are sensory, and those which are motor, *i. e.*, into those in which the chief manifestation is pain, and those in which movement and not pain is the striking feature.

Pain in the region of the heart is the inseparable companion of lesions of the heart itself. The distress and agony of a failing heart muscle, an occluded coronary artery, or a diseased cardiac valve, is evidently the outcome of the local lesion. True angina pectoris may possibly exist, as a functional or organic centric nerve disorder, but, to my thinking, it is probably always the result of a more or less obscure organic disease of the heart itself. It comes not, therefore, within the horizon of our present view.

The hysterical mimicry of it needs, however, a passing notice. Rather oddly, it may be, it has been my lot to see this hysterical angina more frequently in men than in women; and sometimes the complaints of pain are so urgent that the clinician may well be deceived. Usually, however, a little care will show that the facial expression and the general acts of the patient are not in accord with the alleged intensity of suffering, that emotion plays an important *rôle* in the bringing on of individual attacks, that other evidences of hysteria are visible, that no failure of pulse occurs during the paroxysm, and that it is impossible to find an antecedent history of alcoholism, rheumatism, syphilis, excessive obesity, heart strain, advancing age, or other well-known cause of true angina pectoris. I have seen thrombosis of the coronary artery occur in a young subject and produce symptoms that might possibly be ascribed to a neurosis. In such a case, however, there must be always a peculiar expression of gravity in the face and acts of the patient which an experienced physician could hardly fail to recognize.

In 1879 Vulpian called attention to the frequency of valvular disease of the heart in locomotor ataxia, and his observations have since been confirmed by both French and German writers. It is usually, but not always, the aortic valves that are involved. I am inclined to believe that in many of these cases the lesions are *de facto* trophic, *i. e.*, secondary to nerve lesion. This seems to be especially true of cases like those reported by Teissier, in which the aortic valves were punched as with a perforating ulcer. Whether this trophic view be or be not correct, certainly in some of these cases, and I believe also in cases in which no valvular lesion can be detected, violent nerve storms occur, accompanied with excessive pain—nerve storms similar in character to those which constitute the so-called gastric crises of posterior sclerosis, and entirely different from the paroxysms of true angina pectoris.

As illustrating cardiac crises, I report the following case, made more interesting, perhaps, by the fact that the patient had been seen before he came under my observation by several of the best clinical teachers of this city without the true nature of his illness being recognized.

Mr. B., brewer, aged 71. In spite of long-continued military exposure and hardships, and of excessive use of alcohol over many years, Mr. B. had been a very powerful and vigorous man until about 67 to 68 years of age, when he began to suffer from vague rheumatic pains about the head and thorax, and occasional evidences of vertigo when getting up from

a chair, or, more especially, when rising from a horizontal position. These symptoms increased, and after a year or two were followed by attacks of excessive thoracic pain. These spells had increased in frequency and violence until I saw him. There was also, during this time, great complaint of a peculiar acrid, "coppery," bitter taste, recurring at intervals, and so annoying as to throw the patient into paroxysms of rage. Even before the first of the thoracic attacks the patient had noticed that he had great difficulty in buttoning his clothes, and at the time I saw him he was not able to dress himself. There were numbness and paræsthesia in the arms and hands, with great sensitiveness to temperature, any slightly warm substance producing violent burning pain, so that it would be dropped at once. Tinnitus aurium and slight progressive deafness were also present.

At the date of my visit the paroxysms were very frequent; they would come on suddenly, the pain becoming excessive in a few minutes. A spot of intense, horrible burning would develop over the middle of the right axillary region, accompanied by a sensation described as like a tight band constricting the thorax even unto death, and also by frightful shooting pains through the chest into the abdomen. In a little while the abdominal pain also would grow into an agony, with violent retching and futile attempts at vomiting. The heart's action was rapid and arhythmic; the pulse feeble, hobbling, irregular, intermittent. During the agony there was great mental excitement, and in the acme of the paroxysm an overwhelming oppression and feeling "that the room was too small" would force the patient into the open air; when in the open air unrelieved, he would exclaim "that the whole world was too small to contain him." During the height of the attack the excitement was so great that it was almost impossible to restrain the patient from getting out of bed, walking the floor, and even rushing into the streets. Shudderings, furious cursings, wild ejaculatory cries, screams of frenzy, threats of suicide, were but the manifestations of a despairing fury of agony, which in a number of instances ended in determined attempts at self-violence and at suicide. One very violent crisis terminated in a convulsion, from which the patient passed into a condition of stuporous melancholy, with strong suicidal impulses.

There was, when I saw Mr. B., a distinct systolic mitral murmur, and without doubt a valvular insufficiency, which had led to the diagnosis of organic lesion with secondary anginose attacks. The character and seat of the pain—the facts that its chief centre was axillary, that it was burning, that it radiated so forcibly into the abdomen, that it lasted for many hours, that it was accompanied by vomiting and often a perfect frenzy of restlessness and rage—made, however, to my mind, highly improbable the theory that the pain was truly cardiac, which improbability was greatly increased by the circumstance that there was no shortness of breath or distinct failure of circulation between the paroxysms. This doubt was changed into conviction by finding, first, disordered sensation and co-ordination in the hands, though the only signs of ataxia in the legs or gait were a curious inability of the patient properly to define the exact position of his legs when his eyes were shut, and some sluggishness of the knee-jerks; second, distinct Argyll Robertson pupils. The diagnosis of a posterior sclerosis commencing in the upper segments of the cord was confirmed by the after history of the case.

Slowly the pain centre worked downward, until it became distinctly abdominal, and the manifestations were chiefly those of a gastric crisis. Still later there developed bladder crises, paroxysms of burning, lacerating agony in the region of the bladder, with violent straining, and with screaming and incessant attempts at urination. There was the wildest mental excitement, ending almost invariably, unless morphine were given hypodermically, in frenzied attempts at suicide. Still later in the case lancinating pains, with marked paræsthesia, appeared in the legs. Finally, loss of co-ordination, absent knee-jerks, and ataxic gait completed the picture of locomotor ataxia.

The case which I have just recorded illustrates so clearly the diagnostic rounds by which the clinician must climb to a knowledge of the true nature of a cardiac crisis, that it seems hardly necessary to say more upon the subject, and I pass, therefore, at once to the second portion of my address, namely, a study of those cardiac nerve storms in which the disturbance is purely motor. In

doing this it seems proper to say a few words concerning some rare and curious cases which I suppose must be known as epileptic, although not only are the symptoms peculiar, but also the best results are obtained by treatment different from that adapted to ordinary cases of epilepsy.

In ordinary epilepsy disturbances of the circulation appear to be secondary and subordinate, but in the cases of which I am now speaking they are exceedingly prominent, and, indeed, dominant. I have also obtained the best results in treatment by the use of cardiac remedies, so that one is half disposed to believe that the epileptic convulsions are, in fact, due to the existing cardiac hypertrophy, and are not simply true epileptic nerve storms which have been modified by co-existent heart disease. The following case is a typical one:

Mr. R. S. was first brought to me in the latter part of 1886 by Dr. R. S. McCombs, of this city. In 1880 he had suffered from a violent attack of cardiac inflammation, probably endo-pericarditis, but had since been free from marked cardiac symptoms, except occasional palpitation. He gave no history of habitual shortness of breath, although he was not able to take violent exertion.

In 1883, he began to have epileptiform attacks. These attacks were stated to come on without aura, and in those seen by Dr. McComb without any primary pallor at the moment of seizure. During the attack there is excessively violent heart action, with intense flushing of the face, and a rapid formation of punctate ecchymoses over the face, and a general oozing of blood from the surface of the face, so that it can be wiped off. Sometimes there is hemorrhage from the nose. The conjunctiva is always intensely congested, swollen, and not rarely ruptures during the attack, so that the blood runs down over the face. When the attacks come on, according to the father's statement, Mr. S. always pitches forward, and usually is quiet, though on several occasions there have been violent general convulsions, and the tongue has at various times been badly bitten. No severe hemorrhage has been noted from the tongue, but if the head be cut in the fall it bleeds furiously; and on one occasion, when the conjunctiva was scratched by a broken spectacle-glass, half an ounce of blood is said to have been lost from the scratch in fifteen minutes, and the bleeding to have continued for two days before it could be arrested. After the attack Mr. S. usually goes to sleep and remains very dull and heavy for hours. Ten to twelve hours after the paroxysm a second one is very apt to occur. The unconsciousness is during a paroxysm, always complete: the onset is absolutely abrupt.

An examination of the heart showed great enlargement of the area of percussion dulness; a diffused, very powerful impulse, most concentrated about two and a-half inches below the nipple, and a loud, blowing, second-sound murmur heard all over the cardiac region, as far to the right as the right nipple; very pronounced at the sternal notch, but loudest and strongest at the ensiform cartilage, with a distinct blowing murmur in the carotid and also at the back.

There had been a number of the attacks, and the free, long-continued use of the bromides had failed to modify either their frequency or severity. He was placed upon the use of large doses of aconite in addition to the bromides which he had been taking, with the result that no paroxysm occurred for three months, during which time his general health much improved. The next paroxysm was attended with general convulsion, extraordinary facial ecchymoses and free bleeding from the conjunctiva.

It may be interesting to note that the continued use of aconite and bromide has kept the symptoms in check until the present time, and that the only attack during the present year occurred whilst Mr. S. was ill in bed with "*la grippe.*"

The term *tachycardia* signifies excessively quick heart action, and of course is, in accordance with its etymology, applicable to any case with rapid pulse. Fortunately, the word has not yet been used with sufficient frequency or con-

cord to affix upon it, by popular acclaim or habit, any distinctive meaning. Some term is certainly needed in modern medicine for use as the generic name of diseased states in which violent action of the heart exists without being dependent upon organic disease of the heart itself, or upon acute febrile disturbance, or upon a general constitutional disease, such as exophthalmic goitre; and I propose the restriction of the name tachycardia to those cases in which very violent heart action occurs without obvious reason. Most of these cases belong to one of three classes: First—Those in which there is paralysis of the pneumogastric or inhibitory nerve. Second—Those in which the cardiac disturbances are reflex. Third—Those in which the affection may be strictly considered to be a neurosis.

First.—Paralysis of the pneumogastric nerve is a rare disorder, of which, however, medical literature contains numerous illustrations. It may be centric or peripheral. Thus Dr. H. Doelger, in a Wurzburg Thesis, 1883, recorded a case of apoplexy in which the glosso-pharyngeal, the hypo-glossal and the facial nerves were involved, and in which there was also a pronounced acceleration of the pulse, which rose to 168, with other symptoms indicative of pneumogastric palsy. In this case there can be scarcely any doubt but that the inhibitory centre in the medulla was involved in a small clot or embolus. More frequently the pneumogastric paralysis is peripheral rather than centric, and it is commonly due to pressure by cancerous or other tumors; whilst the records of diphtheria seem to prove that it may be the result of a peripheral neuritis involving the pneumogastric nerve.

Second.—Irritation of a sensitive nerve is apt to cause slowing of the heart action by stimulating the pneumogastric centre. It would seem, however, that there may be a reflex tachycardia, for although such cases must be rare, and I cannot remember to have seen one, Rommelaere reports one in which he asserts that an extremely rapid cardiac action was caused by the irritation of a biliary calculus; and in the paper of Proebsting may be found details of three cases in which a pulse of from 200 to 250 was believed to be reflexly caused by irritation of the female sexual organs.

Third.—Violent heart action, due to hysteria and allied conditions. This is so common that it is not necessary to do more than to allude to it, and to call attention to the fact that a violent emotion may, without causing distinct hysteria, produce at once an excessive tachycardia, which is liable to recur afterwards without obvious cause. As an illustration may be related a case reported by Prof. Gerhart, in which a violent fright produced in a young woman a pulse of 120, which persisted for some time, and was accompanied with a slight cardiac murmur, the paroxysm breaking off rather abruptly and recurring afterwards. Carafy reports a somewhat similar case to this, as happening during the Paris siege. The pulse in this instance reached 228, but exposure and privation, and not simple emotion, appear to have been active causes, so that probably exhaustion was a large etiological factor. Under the present heading, also, may be considered such a case as that reported by Traube, in which tachycardia developed after excessive exertion in running quickly up long flights of stairs.

The cases of tachycardia which I have grouped together under these headings can scarcely be considered to represent true nerve storms, and are only related to cardiac motor nerve storms by the similarity of symptoms, and the fact that a few cases of habitual cardiac nerve storms of the character spoken of have had their origin in acute attacks produced in one of the ways mentioned.

Such causation is parallel to what occurs in the history of nerve storms not connected with the heart. Thus, an epilepsy in its first paroxysm may indeed be a true essential epilepsy, but, on the other hand, the so-to-speak, accidental epileptic attack, due to the abuse of alcohol, recurring several times from the direct effects of the poison, may have for its outcome an essential epilepsy, which continues, although the poison is no longer taken into the system.

In order to distinctly separate in nomenclature the cases of rapid heart action just spoken of from true cardiac motor-nerve storms, the latter may be called "*Paroxysmal Tachycardia*," though there is reason to suspect that even paroxysmal tachycardia, as thus defined, would represent two or more affections. At least it is certain that in some of these cases obvious cause has existed before the primary attack, whilst in others it has been wanting. Hysteria, also, may closely mimic the true paroxysmal tachycardia, but what affection does it not simulate?

Cases in which a paroxysmal tachycardia commences in a definite cause are illustrated by one recorded by Prof. W. Winternitz, in which a woman, aged 40, after excessive emotion had a violent attack of tachycardia, and henceforward suffered almost daily from paroxysms which commenced with pallor in the face, a sense of anguish in the heart, a pulse from 230 to 260 a minute, with vibratile motion over the heart and distinct increase of the percussion dulness, the attack going off with a few very powerful and slow contractions of the heart, followed by a long, slow, dicrotic pulse, which in a few minutes became natural. No treatment was of any avail, but the attacks ceased spontaneously when the woman became pregnant. Zunker records an instance of paroxysmal tachycardia in which the primary paroxysm had been produced by excessive exertion, but recovered without special cause. These attacks were very long, and the pulse reached 220. There were also contraction of the pupils, cyanosis and some œdema of the lungs.

It is probable that these cases, and especially the last one, differ from that affection for which I would propose the name of "*Essential Paroxysmal Tachycardia.*"

The definition of the disease would be a recurrent paroxysmal neurosis, in which attacks of excessively rapid heart action occur without obvious immediate or predisposing cause, and without pronounced pain or excessive cardiac distress, the pulse rising to 160 and upward, the sounds of the heart remaining normal, and it being frequently possible to arrest the attacks by drinking a glass of cold water and certain other procedures of apparently trifling import, the disease having apparently no tendency to shorten life or to develop organic disease, and being entirely compatible with great mental and physical activity.

Prof. Nothnagel[1] puts on record cases of tachycardia, several of which certainly represent the disorder now under consideration. In the most characteristic case the man was subject to violent heart action, which would come on abruptly, even during absolute quiet, without pain, but with some feeling of anxiety; in a moment the pulse would rise to 180, the sounds of the heart remaining normal.

The length of the attacks was from a few minutes to several hours. Sometimes they would be shortened by the patient taking a long breath, and whilst still holding his breath, drinking a glass of cold water. When about half a glass was taken the heart would suddenly quiet down, three long slow beats would follow one another and the normal beat be attained. Sometimes, however, the attack, instead of being shortened by this procedure, would be only momentarily interrupted. There was no evidence of valvular or other heart disease during or between the paroxysms.

I myself have seen one typical case of essential paroxysmal tachycardia in the person of a physician who has long enjoyed the reputation and the twofold work of an exceedingly active country practitioner and of an aggressive reformer.

A very vigorous man, Dr. H. C., aged 37, received a sharp shock or jerk by stepping from a piazza to the ground which was further off than he thought. This was followed by a strange feeling of fulness in the chest, which was relieved by lying down on the left side. Two or three months after this there was a second, and a few months later a third attack. These came on without any apparent cause, with a slight jerk under the breast bone, and were accompanied by some sense of fulness of the chest and mild pains diffused down both shoulder blades. In the third paroxysm he first discovered that the pulse was so frequent and so indistinct that it could not be counted. After this the attacks recurred every few months, but were always quickly arrested by lying down upon the left side, and did not in any way interfere with the general health or business activity.

No change occurred for two or three years, when it was found that lying upon the left side no longer gave very distinct relief, and the paroxysms increased in length and severity. During their height, while the patient was lying or sitting still, the pulse would be 160 a minute, but upon any effort, such as walking, it would rise to 200 a minute. During absolute rest the only disagreeable sensations were fulness of the chest and slight pains under the right clavicle, but in a number of instances the attacks developed under such circumstances that continued walking or buggy-riding was a necessity, and on these occasions pains would come on in the back of the neck, associated with an almost complete inability to prevent the head from dropping forward. The onset of the paroxysm was habitually so abrupt that it has been compared by Dr. H. C. to the effect of the passage of a bullet, and the cessation was no less instantaneous than the coming on. The attacks frequently continued for hours, and the only remedy which was found to afford relief was morphia, until one day the patient by chance drank a full tumbler of cold water rapidly, when instantly the pulse dropped to its normal rate. Acting on this idea, for a time, whenever the attacks came on, a glass of ice-water was gulped down; at once the attacks ceased. Finally, however, this measure failed to give relief; then it was found that a cup of strong coffee, taken as hot and as rapidly as it could be, would produce instant arrest of the symptoms. This continued to serve until more than twenty years had elapsed from the coming on of the attacks, when it too became abortive.

Dr. H. C. is now over eighty, and since about his sixtieth year he has had these attacks on an average every three weeks; at times they have recurred three or four times a month. In 1886 Dr. H. C. suffered between March 25 and October 1, inclusive, from twenty-four attacks, some of them lasting fifteen hours. He was then eighty-two years old. About this

[1] Wiener Med. Blt., 1887.

time he heard that an attack could be arrested by holding the breath and bearing down as in defecation. On trial, the result was immediate, but after a few paroxysms the controlling power was lost.

Up to 1888, in their main points, the paroxysms had not materially changed, but they had grown longer, often lasting from ten to twenty-six hours. They had always commenced with a jerk under the sternum, followed by marked giddiness and a sense of warmth over the whole body. If the recumbent position upon the left side were assumed the giddiness ceased, but occasionally recurred during the attack, and could, at almost any moment, be produced by exercise. Dr. H. C. discovered that if he should rise suddenly and run or walk a few yards, the giddiness would come on with such force as to cause nausea, followed by abrupt vomiting, which in turn would put an end to the attack. This led to the habit of jumping up quickly and running a short distance during the paroxysm, with the result of giddiness, vomiting and immediate relief. After a time, however, this failed.

During these years the heart has been frequently examined by various physicians of high rank, both during and between the attacks, and at no time was there found a cardiac murmur. The paroxysms have occurred by day and by night, during exertion and during quiet, and have rarely if ever been produced by emotion or any discoverable cause. They have never been followed by any signs of fatigue or exhaustion, and after being kept awake by a nocturnal paroxysm for hours, the subject would go to sleep as soon as the pulse would become quiet, and awake the next morning without any sense of fatigue or disinclination to work. The health has continued perfect; and almost always, even during the height of the attack, it has been possible by an effort of the will and by interesting himself in reading, conversing or writing, for the subject to forget entirely the sense of fulness in the chest, or indeed the existence of the paroxysm, although the pulse continues unchanged. Lying upon the back or right side has always produced a slight sensation of suffocation, and even when the peculiar glow of heat over the whole body has been most pronounced there has been no rise of temperature that could be noted with the thermometer. Usually there is no excessive discharge of urine after the attacks, although sometimes it has been increased, which increase has been thought to have been caused by the large quantities of water taken to relieve the sense of thirst, and with the hope of relieving the paroxysm. Various medicines have been tried, but, as already stated, the only one which has ever afforded relief is morphia. On one occasion twenty drops of the fluid extract of veratrum viride were taken inside of four hours without producing any effect whatever. In another paroxysm, sixty drops of the tincture of digitalis were administered at a single dose; two hours after ten drops more were given, and again in another two hours ten drops more, without result.

In 1888 the power of arresting the spells by rapidly drinking ice-cold water was recovered. Early in 1889, Dr. H. C., after a great sorrow, began to suffer with pains which would begin under the right shoulder blade, extending through to the right nipple and from this through to the right side of the chest. Never was the left side affected. After these pains had lasted for a few minutes the heart beat would become slow, dropping to eighteen a minute. There was with this no distress, no sense or feeling of threatened death, but occasionally complete momentary intermission of the heart's action. These attacks came back at intervals during three months, during which time there was no attack of rapid cardiac action. They then ceased, and the old attacks reappeared.

In October, 1890, Dr. H. C. entered his eighty-seventh year. He is still a vigorous man, able to ride about in his carriage over the country for many hours, and even to walk considerable distances. For a year or two, when he is absolutely at rest physically and mentally, his pulse rate, which in his younger days was seventy, has been fifty-two. The attacks are exceedingly frequent, occurring during the last year almost every day, but are very frequently put an end to by drinking cold water. The pulse rarely rises above 135, there is little or no distress, and only rarely do the attacks last more than a few moments, except that about every two or three weeks there comes one that will yield to nothing in the way of treatment until it has gone on for from four to eight hours.

The little effect that the attack has upon Dr. H. C. is shown by the fact that I have recently received from him a letter, written in the midst of one of his most severe paroxysms, in which the handwriting shows no tremulousness, and indeed in no way gives

evidence that it is the work of an old man. The handwriting and the diction are alike clear, rapid and firm.

When we come to consider the nature of the curious affection I have been describing, we find ourselves in the face of a difficult and perplexing problem. It seems to me, however, that certain elements of the problem which can be fairly made out ought to be stated. In the first place the attacks may be considered to be of the character of a nerve storm ; in the second place, they produce extraordinarily little effect upon the heart, the bloodvessel system and the general organization ; in the third place, they are probably not associated with, or dependent upon, any so-called organic lesion, but represent a functional neurosis ; (it being understood that most, if not all, of the so-called functional neuroses really depend upon organic change, but that we employ the term "functional" simply to mean that the organic change is not sufficiently pronounced to be recognized by our crude methods of investigation, so that in our terms, at least, it is supposed not to exist.)

It is only necessary to point out the curious parallelism which exists between the epileptiform convulsion and the tachycardiac nerve storm. Precisely as you may have an hysterical, a toxic, or a reflex epileptiform attack, so may you have an hysterical, a toxic or a reflex tachycardiac paroxysm ; and precisely as there remains after the separation of hysterical, toxic and reflex epilepsies a set of cases (essential epilepsy, so-called) in which the paroxysms come on without known cause, so also do there remain cases of tachycardia, which are properly classed as essential paroxysmal tachycardia.

It is a matter of considerable interest to decide what is the mechanism through which the excessive heart action is developed. Extraordinarily rapid cardiac action may be the outcome of pneumogastric paralysis, or of irritation of the accelerator nerves. Whether it can occur in a third way is, I think, in the present state of our physiological knowledge, uncertain. It is conceivable, but not, I think, proved, that changes in the nerve apparatus of the heart itself may bring about an exceedingly rapid heart action, since the original impulse of rhythmical movement occurs in the heart itself.

What, then, is the probable mechanism of tachycardia ? As stated in the beginning of this paper, the essential nature or organic mechanism of a nerve storm still remains obscure. Whether, however, we believe a sensory nerve storm like a migraine to be due to negative conditions of the sensory centre or not, the general consensus of professional opinion at present seems to be that the epileptic or motor paroxysm is due to a discharging lesion and is not the outcome of a temporary palsy ; so that analogy indicates that the tachycardia is due not to a paralysis of inhibition, but to a discharge of nerve force. Further, the researches of Gaskell have, I think, proved that the pneumogastric nerve has trophic relations with the heart muscle. This conclusion is also in accord with the discovery made by Eichhorst, and confirmed by Von Anrep, that in birds section of both vagi is followed by rapid fatty degeneration of the heart. In view of these facts, the lack of distress, the absence of increased arterial pressure or general disturbance of the circulation, the failure to effect the nutrition of the heart, of the bloodvessels, or of the general system (which are so

characteristic of essential paroxysmal tachycardia), all seem to me to negative the idea that the paroxysms are the outcome of pneumogastric paralysis. Again, the slight influence which the affection has upon the heart or the general nutrition makes it, to my thinking, at least improbable that the paroxysms are due to changes in the structure of the nerve centres in the heart itself. Although I confess that at present we have not proof that the cardiac ganglia are not diseased in tachycardia, the aggregated facts seem to me to strongly indicate that the tachycardiac paroxysm is caused by a discharging lesion affecting the centres of the accelerator nerve. Some of the reasons for this belief are so obvious that I shall not take time to point them out, but it may not be wasting your minutes to call attention to the fact that, in lectures published in 1879, Francois-Franck asserted that any great increase of the pulse, which in the animal is produced by stimulating the accelerator, is not accompanied by any increase of the arterial pressure, or by any augmentation of the work done by the heart. Francois-Franck believes that he has shown that this is because the acceleration of the heart's action is primarily due to the shortening of the diastole, and that, therefore, during the heart's systolic contraction, so little blood is expelled from the heart that the aggregate amount which passes through the ventricle during a minute is not increased. The conclusions of Francois-Franck are, I believe, generally adopted by physiologists; certainly Prof. Foster, in his text-book, gives them the stamp of established truths. If they be correct, and if, as is almost certain, the accelerators have no trophic relations to the heart, it is evident why rapidity of pulse, solely due to accelerator irritation, should produce little effect upon the heart and general system.

One of the most curious phenomena of tachycardia is the arrest of the paroxysms by the swallowing of cold water, which is probably a characteristic feature of the disease, since it has been noted in almost all the elaborately observed and reported cases. It affords a plausible argument against the probability of the rapid pulse being due to pneumogastric paralysis, since Dr. S. Meltzer has shown that swallowing is attended with a loss of tone in the vagi centre, and consequent weakening of cardiac inhibition and increased frequency of the cardiac beats. It is, however, probable that the arrest of the tachycardiac paroxysms by the swallowing of hot or cold liquids, is due to stimulation of the inhibitory cardiac centre, produced by irritation of the peripheral nerve filaments of the stomach. It is a well-known physiological fact that irritation of the abdominal nerves is capable of reflexly inhibiting the heart, and Dr. H. C. has found that the best method is to swallow the water as rapidly as possible and as cold or as hot as he can take it; if the water is only moderately cold, much larger quantities of it are required.

You no doubt, gentlemen, will agree with me that at present the physiological explanation of the tachycardiac paroxysms remains uncertain, but this is no reason for refusing to acknowledge the affection as a distinct neurosis, for are we certain of our theories in regard even to such a familiar matter as the epileptic convulsion? And who has yet established beyond cavil the explanation of the "white fingers" of Reynaud's disease? Assuredly, positive knowledge as to the nature of very many neuroses still remains but the hoped-for fruit of future research.

CLINICAL SIGNS COMMON TO MOUTH, NOSE, THROAT AND EAR.[1]

The Cephalic Mucous Membrane.

By Harrison Allen, M.D.,

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If the student examines the open mouth in the dead subject, he sees lying at the floor the tongue and the teeth of the lower jaw; above, the roof of the mouth and the upper jaw; at the sides, the cheeks; behind, the soft palate, the tonsils and the posterior wall of the pharynx. A glance takes in these outlines of an apparently sharply limited region. Now, let an attempt be made to remove the parts already defined. The specimen will include, necessarily, the face and the pharynx; and the boundaries of the mouth will be found to be anything but sharply limited. The same remark is true of the nose, the throat and the ear. It may be accepted as an axiom that structures which are associated anatomically will be found to be associated clinically also. Hence, the mouth by itself, the nose by itself, the pharynx by itself, the ear by itself, the nasal chambers by themselves, as well as all related avenues, whether they are thoroughfares or blind-alleys (and these embrace structures so disassociated as the lachrymal ducts, the maxillary, frontal and sphenoidal sinuses), are regions with imperfect boundaries, for each demands something of the others.

It is to the clinical signs yielded by the mucous surfaces contained within such a specimen and thus represented in the living subject as a natural, yet complicated, region, to which I would invite your attention. I will treat of it as a great system (the several parts of which are inter-dependent), which may receive conveniently the name of the *cephalic mucous membrane.*[2]

The Sense of Fatigue which Ensues upon the Act of Reading Aloud.—Let me here refer to an illustration of the artificial distinctions which are used to separate the subdivisions of the cephalic mucous membrane. In speech and in singing it is required to bring into play every portion of the mouth, the pharynx and the nasal passages; the clinical conditions associated with the mechanisms can be interpreted best by remembering the normal uses to which the several structures are put. One of the most constant signs of irritated states is inability to read aloud, or of a sense of fatigue of the muscles of the entire pharynx, as well as of the sides of the neck and face after an effort of the kind. I have recognized this symptom in clinical conditions so remote as hyperplasia of the anterior end of the middle turbinated bone; in adenoid growth at the roof of the pharynx; in paresis of the palato-pharyngeal muscles, whether symmetrical or asymmetrical; in the same condition of the left vocal cord; in unilateral paresis of the tongue; and in abnormal shape of the left cornu of the hyoid bone.

[1] A clinical lecture delivered by invitation before the First District Dental Society of New York.

[2] Strictly speaking, the parts in question embrace a region bounded inferiorly by the plane of the hyoid bone.

It has been observed that speech in conversation is much more easily managed than speech in reading aloud. The explanation usually given is that in conversation the idea which is to be expressed is formed by the mind before the muscles used in speech are called into co-ordinate action; whereas, in reading aloud the mind is not prepared for what it is expected to demand of the muscles of speech. This, however, does not explain all the facts. For in the instance of professional elocutionists, or of actors, who have committed to memory the words to be uttered, the same difficulty is acknowledged as with those who read from unfamiliar texts. The tongue, in assisting, as it does, in the production of speech-sounds, in an exact manner is to be accused of causing many of these sensations of fatigue. I believe that they are due to the motion at the basal third of the organ, namely, in that part which is raised and depressed to a greater degree than is the case with the anterior two-thirds. It is here teased or compressed by diseased conditions, which are so numerous at the side of the pharynx at the region of the base of the tonsil, and from this point extending downward to the epiglottis. I am convinced that the slightest thickening of the tissues in this part of the pharynx will be sufficient to excite and maintain a sense of weariness or of exhaustion, especially so where the circulation is impaired and the mental intent is decided.

Remarks on the Tongue.—Respecting the anterior two-thirds of the tongue, it is very interesting to watch (these observations, of course, can be very easily conducted when the mouth is open) the delicate undulations which characterize the dorsal surface. Careful inspection, when the mind is once directed to the subject, will convince the observer that the tongue is divided into four nearly equal parts, namely, the basal, the apical, and the two intermediate parts, *viz.*, the pre-basal and the post-apical. The general sensibility of the tongue appears to increase from the tip toward the base; at least this is so if we measure the degree of sensibility by the manner in which the tongue responds to the pressure of an instrument. Thus the most sensitive condition may enable a tongue depressor to be used upon the tip, the part immediately back of the tip, and that in advance of the base; but beyond this, in a majority of individuals, more or less training is required before the pressure is well borne. It is quite possible that the instrument throws down the excessively sensitive lingual base against the lymphoid nodules at the side of the pharynx. In this way the fact is accounted for that the difficulty of controlling the tongue is in inverse ratio as such pressure is applied from the tip of the tongue toward the base. The very opposite conclusion must be drawn as to the distribution of tactile sensibility, which is most developed toward the tip.

One of the most important relations of the tongue and other parts of the cephalic mucous surface is seen in that which exists between this organ and the structures of the lower jaw. At first sight it would appear that no two regions would be more remote than the teeth lodged in the substance of the lower jaw and the mobile muscular lingual structures. But a most disastrous accident can happen by retention of pus at the root of a lower molar tooth, which may open internally and create cellulitis in the loose tissue beneath the mucous membrane of the alveolo-lingual groove. A secondary inflammation excited in this

way is known to extend with marvellous rapidity to the tongue, and an acute glossitis, with all its attendant dangers, be developed in a few hours. Even when these consequences do not ensue, the opening of the alveolar abscess toward the lingual border of the ramus may be associated with pharyngitis on the corresponding side, and with painful deglutition.

Fur on the Tongue.—In this connection permit me to speak of the fur on the tongue. There are many phases of localization of fur which do not arise from general fever, from disturbances of alimentation, or from irritations of the teeth.

In chronic pharyngitis there is almost always a furred condition of the base of the tongue; and the region of the basi-lingual glands is sharply defined, not only by color, but by reason of the white fur which lies directly in front of the base. In acute tonsillitis, and especially in quinsy, the fur is of a yellowish-white color and extends in advance of the base of the tongue; but the tip and the region just back of the tip are almost entirely free.

It is probable that both of these varieties of fur have some connection with the state of the disease with which they are associated, and that both are probably due to changes of temperature. In a word, pharyngitis will develop the fur at the base, and tonsillitis at the base and a portion of the dorsum in advance thereof. It is quite likely that the same disposition will cause fur to be localized to parts opposite the gums and teeth. In an inflamed condition these structures may create an elevation of temperature in that part of the tongue adjacent to it, and thence lead to the formation of patches of fur.

The tongue may be persistently furred throughout when the general health is good, on account of disease which is present within the nasal chambers. I have noticed an example of this in a young lady whose case I have had under observation for a number of years. As a result of scarlet fever in childhood she had suffered from inflammation of the bones entering into the framework of the nose. The tongue was at all times covered with a thick, tenacious, yellowish-white fur. As the case improved under treatment this fur became less marked and at times almost entirely disappeared; but a relapse in the condition of the nasal catarrh was invariably accompanied by a return of the fur on the tongue.

Referred Sensations.—The subject of referred sensations, by which term is meant the reference of a morbid sensation to a structure remote from the cause, is a very curious one. I infer that many of these symptoms are reflexes due to peripheral irritations, and that hypersensitive conditions of the mucous surfaces, from which they originate, always exist. Deeply situated excitants do not usually create them. A foreign body in the substance of the soft palate of a child three months old may create nothing beyond a local soreness of the palate. It is hardly necessary to mention that bullets and other foreign bodies may be carried in the deep tissues for years without exciting any distress, provided that they do not impinge upon nerve trunks. But, in the event of a peripheral irritation of the cephalic mucous membrane being excited by a foreign body, not only is the degree of disturbance uniformly high, but it is often a matter of extreme difficulty to locate it. The sensations of the patient are fallacious and

give us no clue (on the ground of anatomical or physiological data) for their localization. Thus, there appears to be no reason why a peripheral irritation of the mucous membrane of the naso-pharynx, and of the base of the tongue (regions which are so frequently the seat of disease) should be referred to the level of the hyoid bone; yet this is generally the case. I have seen several cases in which foreign bodies were lodged in the mucous membrane of the pharynx on a level with the tonsil, and all the distress was referred to the level of the hyoid bone. If the search had been restricted to the region named, failure in detecting the body naturally would have ensued.

As a striking example of complex conditions referred to the nasal chambers and the brain from dental irritation, I will narrate the following case:

There came under my notice, in the early part of January, 1889, an unmarried man, who performed the duties of janitor in one of the public institutions in Philadelphia. He had suffered for five years from vertigo and occasional convulsions, and had been also for the same period the subject of chronic nasal catarrh.

The membranes overlying the turbinals were puffy, vascular and irritable. The discharge was mucoid and moderate in quantity. The chief distress arose from the disposition to obstruction within the nasal passages. The patient reported on account of the catarrhal trouble. Becoming acquainted with the vertiginous sensations, I urged him to place himself under the care of Dr. Horatio C. Wood, who in response to my inquiries has kindly written to me as follows:

FEBRUARY 6, 1890.

In reply to your inquiries, I state the following history concerning the case of Mr. ——, whom you sent to me January 8th, 1889:

He had a nocturnal epileptic convulsion in 1887, and again in the latter part of 1888. Before the convulsions he woke up feeling faint and distressed for a few minutes; became unconscious, was violently convulsed and then slept, waking in the morning as usual. At the time he was seeing me, in January, 1889, he complained much of a dull headache, or rather sense of pressure and weight in the top of the head, extending low down on the occiput. He also complained that in the street and other places he had attacks of a peculiar sensation, as if his "heart was rising and spreading all over him," and in which he would become dizzy and extremely alarmed. Most careful examination failed to detect any evidence of venereal or of local organic disease, past or present. The eye-grounds, the pupils and ocular movements, and the knee-jerks were normal.

He was first treated with bromides and antipyrine, and afterward with mercurials, without being apparently benefited. Yours truly,

H. C. WOOD.

The catarrhal state proved to be obstinate, and, recognizing its irritative character, I carefully sought for a possible cause for a peripheral reflex. As a matter of general interest I had observed that on both sides the second maxillary deciduous molar was retained in the dental arch, and that no bicuspids were in position. In the lower jaw of the left side the second deciduous molar was retained, but the first bicuspid alone was erupted. On the right side the conditions were normal; namely, the second deciduous molar had been lost, and both the bicuspids were in position. The patient having remained under my care for the catarrhal trouble for a period of eleven months, and the result of the treatment being unsatisfactory, it occurred to me that the irritation exciting the nasal catarrh, the convulsive seizures and the vertigo were reflex in nature and might take their origin in the teeth which were unnaturally present in the jaws, and I therefore advised their extraction. Fortunately for himself, as the event proved, he decided to have the teeth removed. They were accordingly extracted November 5, 1889. The roots were found to be entirely absorbed, and the crowns were easily pushed from their attachments. The patient at once ceased to have any

vertiginous sensations, or disposition to convulsions; the catarrhal state and the obstruction to the nasal passages disappeared, and at this time (three months after the date of extraction) he remains perfectly well. The bicuspids are gradually coming into place in the dental arches and taking their normal positions.[1]

The following case illustrates the persistent influence of an exostosed tooth-root exciting a nasal catarrh, lachrymation and occasional epistaxis:

A lady, 35 years of age, reported to me June 3, 1889, with a history of catarrh localized on the left side, and of lachrymation of the corresponding eye, of five years' duration. During the past eighteen months these troubles had been greatly aggravated. The anterior portion of the left middle turbinated bone was enormously enlarged, and was the seat of a constant glutinous, semi-inspissated discharge. Hemorrhages were of frequent occurrence from the same locality. The patient remained under care, although seen at irregular intervals, until December 9, 1889—a period of seven months. At the end of this time I informed her (on the general principles already named) that the catarrhal irritation might be maintained by the first bicuspid tooth, since I found that an artificial crown had long been pivoted to the root. The root was extracted and found to be the seat of exostosis. The patient was promptly relieved of all her distress.

I examined this patient February 4, 1890, and found that the left nasal chamber, instead of being occupied by the large vascular swellings, which was uniformly the case before, was in every way normal, and that the disposition to lachrymation and epistaxis had disappeared.

Much has been written[2]—and very admirably written—on the subject of reflex neuralgia arising within or about the teeth; but I do not know of any systematic description of neuralgic pains in the teeth dependent upon exciting causes elsewhere, or of various forms of malnutrition of the gums or alveolar process being dependent upon diseased states within the cephalic mucous tract remote from the teeth. In illustration of the first of these statements, namely, dental neuralgia arising in points outside of the dental series, I will mention the following circumstance:

A gentlemen was operated upon by myself for a persistent, congestive, irritative catarrh, dependent upon pressure of the maxillary crest against the right inferior turbinated bone. The operation resorted to for his relief consisted in drilling away, on the right side, the points where the crest was exerting injurious pressure. This was done, while the patient was under ether, by means of a large burr-drill. Immediately after the patient recovered from the effects of the ether, he complained of pain in all the teeth in both upper and lower jaws. This condition persisted for two weeks, and was the only circumstance which caused distress attending the operation. The parts healed normally, unattended by inflammation. By the time the nasal condition was corrected the neuralgic pains disappeared.

This patient had never suffered from any trouble of the teeth. They were in good condition, and the only conclusion which could be drawn from the facts was that a reflex dental neuralgia had been established by the lesion determined by the operation, and that it disappeared spontaneously when the parts healed.

In a second case, an operation which consisted in the removal of the anterior part of the left middle turbinated bone was followed by temporary neuralgia in the teeth of the upper jaw of the same side.

[1] This patient has remained well since the above note was written. (H. A.)

[2] See an excellent paper by Dr. A. P. Brubaker, "American System of Dentistry."

In a third case, in which there was extensive inflammatory infiltration in the left nasal chamber, as a result of scarlet fever in childhood, the patient, a robust man in good general health, always complained of a sharp neuralgic pain in the second molar tooth of the right side each time the middle turbinated bone was touched—no matter how lightly—by a probe. The pain in this instance was transient and determined by the duration of the pressure of the probe against the turbinal. Many instances of the same kind could be cited.

Respecting the second proposition, that malnutrition of the gum-tissue and alveolar process may be maintained by foci elsewhere in the cephalic mucous tract, I will describe the following:

A lady, aged 40, reported January 21, 1888. The patient was of a gouty disposition, which is inherited. Since the nineteenth year she has noticed the gums receding from the necks of the teeth. Ever since she can remember there has been a disposition to take cold from slight causes. The catarrhal state was not distressing until two years ago. At that time she contracted what she called "hay-fever," and for the last two summers during the month of August she suffered from an excessive flow of a irritating serous fluid from the nasal chambers, both front and back, with conjunctival congestions and loss of smell and taste. During the winter of 1888 and 1889 she complained of migraine-like headaches which followed attacks of prolonged and exhausting sneezing.

Inspection showed the first permanent molar teeth and the bicuspids both on the right and left side of the upper jaw to be loose. On gentle pressure, pus exuded from around their necks. The characteristic fetor of pyorrhea alveolaris was on the breath. The throat was excessively irritable, and it was impossible to make any examination of the naso-pharynx. The nostrils were obstructed by large vascular swellings on the anterior ends of the inferior turbinals; these resisted the constricting influence of cocaine. On the left side a synechial band held the inferior turbinals in firm union to the septum.

I recommended that all the loose teeth be immediately extracted, and I declined attempting treatment for the headache and nasal condition until this had been done The patient for a long time demurred, but finally consented to have the operation performed. The teeth were removed in March, 1888, when without any treatment whatever being directed to the nasal passage other than the division of the synechial band on the left side, the nasal symptoms subsided, the headaches disappeared, and the naso-pharynx became tractable. The patient has comfortably passed through subsequent summers without "hay-fever" attacks.

This case is a striking example of the connection which may exist between nasal irritation and pyorrhea. It can be, therefore, accepted that local factors exist which, being themselves of a gouty origin, excite complex symptoms of other parts of the organism which can be cured by the removal of the exciting cause.

It is also noteworthy that the irritability of the muscles of the pharynx was a symptom. This may have been due, of course, to the presence of morbid secretion, but I believe it to have been, in a measure, sympathetic with the disturbances which were awakened in the entire region of which the offending teeth were parts.

In like manner, many instances can be given of pains in the ear of a neuralgic type which has followed the use of the saw in the nasal passages. Others, in which operations upon the tonsil have caused neuralgic pains which have been referred to the tympanic chambers. Others, in which treatment of the tympanic chambers through the external meatus have excited transient neuralgic pains, which were referred to the sides of the neck, and appeared to have ex-

tended from the region of the external ear to the hyoid bone. In like manner an operation at the roof of the pharynx, especially in the removal of adenoid masses, will be followed by sharp neuralgic pain of short duration, which will be referred to the ear, although the ear, in every respect, is normal.

An illustration of this referred painful state occurred in a patient whose symptoms I have been acquainted with for many years.

A young woman who has suffered from early childhood, as a sequel to scarlet fever, with an osteitis of all bones which enter into the composition of the nasal passages, was subject to a very painful condition at the tip of the tongue at times when the nasal mucous membrane was irritated. The local condition was largely influenced and dependent upon the state of the general health and upon climate, and when these conditions were most favorable, both the nasal and lingual states were satisfactory; but when the recurrence to this neuralgic pain at the tip of the tongue (which was accompanied by enlargement of the lingual papillæ) was detected it was always accepted as a sign by the patient that a course of local treatment to the nose and throat was demanded; and when this demand was met—the parts relieved of the inspissated secretion, and the inflammatory excitement controlled by detergent washes—the pain at the tip of the tongue spontaneously disappeared, and the redness of the papillæ was no longer visible.

A lady who had suffered from great irritability of the nasal mucous membrane was subject to attacks of catarrh, complicated with successive crops of furuncles at the margins of the nostrils. She was of gouty habit, and had been subject to attacks of migraine for many years before the nasal attack. It was an invarible circumstance with this patient that appearance of a furuncle was foretold by sensations of a disagreeable character (which were not accurately described) at the tip of the tongue. The sensations would cease by the time the furuncle was developed. No alterations in the tongue were detected in this case.

Relations of the Upper Teeth to the Maxillary Sinuses and the Nasal Passages.—Notwithstanding the familiar occurrence of empyema of the maxillary sinus from the presence of diseased teeth in the upper jaw, it is only of late years that we have obtained definite information on the subject in those instances in which the walls of the maxillary sinus are not distended. Formerly the diagnosis of abscess of the sinus was obtained by signs developed in the cheek and in the line above the gum; but since the means of investigating the nasal passages have improved, we are enabled to diagnose irritative states of the mucous membrane of the sinus when no signs in the cheek-tissues or in the mouth are present. It is evident that even in a slight degree of involvement of the sinus, the mucus would in time fill up the chamber to the level of the opening by which the sinus communicates with the nasal passage, and act there as an exciting cause to inflammation. By careful inspection it is easy to detect the point at which the fluid enters the nose; in this way the nature of the flow can be determined, and a differential diagnosis between the discharge from the frontal sinus, that from a general exudation of the entire nasal mucous surface, and that from the maxillary sinus be formulated.

In illustration of the connection which exists between disease of the maxillary sinus and the teeth, I will invite attention to the following cases:

A gentleman, aged 33, complained of an offensive discharge from the nostril on the right side for over three years. It became especially distressing within the last year. The patient is a night editor of a metropolitan newspaper. He is of neurotic habit, and is liable to severe attacks of acute rheumatism.

A slight dull pain was acknowledged on pressure on the maxillary sinus of the corresponding side above the region of the second molar on the buccal surface. The middle turbinated bone on the right side was found covered with a quantity of pus. The removal of this enabled me to determine that the mucous membrane was of a purplish color, vascular and painful to the touch. In a few moments after the middle turbinated bone had been cleansed of this discharge it reappeared. This fact, taken in connection with the pain over the maxillary sinus, enabled me to make a diagnosis of abscess of the right maxillary sinus. I recommended that the right second molar be extracted and the parts thoroughly drained. This was accordingly done. No pus escaped, but a quantity of most offensive fluid was washed out into the nasal chamber by a syringe, the nozzle of which was inserted into the socket of the tooth. Directions were given as to the manner in which the patient might keep up the irrigations, and he was allowed to return to his home in a distant city. The patient did well until the fifth week, when he suffered from his old enemy, rheumatism. After the attack subsided, an annoying cough remained, and the offensive discharge returned. This compelled him to report a second time for examination and treatment on October 30, 1887. Examination of the parts showed that the abscess had not returned on the right side, everything being in a normal condition. There was no discharge either in the right nasal passage or through the socket of the tooth which had been extracted; but on the left side the same conditions could be recognized that had been seen before the first treatment as existing on the right side. These conditions were treated in a similar maner, namely, in the extraction of the second molar tooth and washing out the offensive retained material, through the nose into the throat. The patient was permitted to return home. He has been heard from several times since 1887 and remained entirely well.

This case is an example of abscess of the maxillary sinus on one side, apparently dependent upon rheumatic habit of body, being cured by drainage and careful irrigation. A recurrence of an acute rheumatic attack excited a similar condition on the opposite side of the face.

The case is also instructive as to the necessity of giving a guarded opinion upon the subject of recurrence of an abscess which might excite a nasal discharge. The patient in this instance supposed that his original trouble had returned.

A physician, aged 49, reported March 22, 1888. On February 24, he had the third molar of the upper jaw of the right side extracted on account of an alveolar abscess. Severe pain in the jaw ensued.

Examination of the interior of the nose showed the inferior turbinated bone of the right side to be intensely swollen, infiltrated, and streaked with pus. Pus was also found on the right side of the naso-pharynx. After cleansing the parts carefully, in a few moments the material reappeared. The face was not swollen but tender on pressure on the line above the gum.

A diagnosis of purulent inflammation of the right maxillary sinus was made. Since the right side of the upper jaw was edentulous the sinus was opened by a drill at a point of selection, namely, at about the position of the second molar tooth. This was done on account of the fact that drainage had not taken place through the socket of the tooth that had been extracted, and as the roots of this tooth have a disposition to be irregular it was uncertain whether relief could be obtained by drilling along its socket. No pus escaped through the opening made by the drill, but an exceedingly offensive odor exhaled, and the end of the drill was fetid. A syringe was then filled with a weak solution of carbolic acid, its nozzle adapted to the opening made by the instrument, and the fluid slowly injected into the sinus. Upon this manipulation a quantity of pus flowed into the nose and thence to the throat. Daily applications of the solution of carbolic acid were made to the interior of the sinus. At no time was the passage of pus into the mouth sufficient for drainage.

By April 1, an abscess appeared on the right side of the thigh—the consequence of a

puncture of the hypodermic needle used by the patient—and at the same time the sinus reinflamed. Believing that the essential condition had been one of a return of the inflammation of the sinus, leeches were applied to the gum above the point at which the opening had been made. These depletions were followed by some relief. The drainage was still insufficient, and the opening of the sinus into the gum was enlarged.

After the first week following the announcement of the femoral abscess, there was for a month marked elevation of temperature the latter part of each day, with nocturnal sweatings. Although no rigors occurred during this period, the femoral abscess increased and involved the greater part of the outside of the thigh. Its opening was followed by exhaustion and tedious convalescence.

The condition of the maxillary sinus slowly improved. The discharge was, apparently, permanently established from below, and the patient recovered at the end of two months' illness.

It is evident that in this case the inflammation of the sinus ensued upon the extraction of the tooth, and was either traumatic or septic. From the subsequent history of the case and from the fact that a large femoral abscess followed the puncture of a hypodermic needle, I incline to the latter opinion. Rheumatic and gouty dispositions of the system appear to favor inflammatory states of the teeth and jaws.

The following interesting case illustrates the advantage of exploring carefully the maxillary sinus, even when it is not proved to be the source of purulent discharge:

A gentleman, aged 36, reported December 6, 1887. He had been a sufferer from constant neuralgia since 1876. The pain radiated from the right side of the maxilla to the vertex, and was made worse by warm drinks held in the mouth. There had been a posterior discharge from the nose into the throat.

Examination of the naso-pharynx showed the middle turbinated bone in the right choana to be both puffy and convex posteriorly, with shining reflexes on the surfaces. No no such appearances were seen on the left side. Seen from in front the septum was bent to the right, and the outer wall of the right nasal chamber was slightly swollen and vascular. No discharge was seen anywhere, either posteriorly or anteriorly, no fetor was detected, nor was pain reported on pressure over the maxilla. After careful consideration it was thought best to have the right upper molar extracted, with the object in view of effecting an entrance into the maxillary sinus and securing drainage. This was done September 12, 1887. No pus escaped through the opening made by the tube. The chamber was washed out, and no pus or increase of discharge appeared within the nasal passage. After the sense of pain attending the extraction of the tooth had ceased, the long-standing neuralgic pain disappeared and never returned. The posterior discharge which had been complained of for four years gradually lessened, and by January 10, had also entirely ceased.

In this case a discharge of four years' standing, and a neuralgia of nine years' standing, were in some obscure way associated with an irritation present on the right side of the face. This had excited vascular swellings in the entire right side of the nasal passage on the level of the right middle turbinated bone, and after a duration of five years proved to be the exciting cause of the localized discharge. Nearly all the conditions were cured by the extraction of a tooth which was removed with the object in view of obtaining access to the maxillary sinus.

Let me in this connection allude to the dangers sometimes occurring in carrying the conservative treatment of teeth to an extreme. I have on more than

one occasion observed that the defective tooth, which was exciting inflammation in the nose, was one upon which the dentist had expended much skill, and put in fillings almost entirely imitating the form and dimensions of the original crown. Doubtless diseased conditions at the root were maintaining persistent inflammation in the lining membrane of the sinus. It is not a pleasant thing for a physician to suggest to a patient, who has expended time and incurred no little expense to save a tooth from loss, that such a tooth be extracted; but the alternative is in an equal degree annoying, namely, that so long as the tooth is retained, an offensive, if not dangerous, discharge from the nasal passage is incurable.

Is it not possible to look forward to a time when, by the generally approved methods of the transplantation of teeth, it may be less important than it now appears to be to keep defective molars in the jaw? Certain it is that maxillary diseases in the better class of patients appear to be increasing. Whether this is owing to the fact that we are now able to detect the presence of such diseases, where in former years it was impracticable to do so, or whether it be due to increased skill on the part of the dentist, who is now able to make useful teeth which were formerly extracted, is a question which I am not in a position to answer.

The Significance of the Hutchinson Teeth.—In has been known for a long time that the shapes of the crowns of the teeth may be modified by morbid influences, exerted during development. When the term "Hutchinson teeth" is used by clinical writers, a definite shape is at once presented to the mind. As you are aware, a disposition exists for the lateral incisor teeth of the upper jaw to become pegged, and for the central incisor teeth of the same jaw to be slightly convex at the sides and to be deeply emarginate (forming a crescentic notch) on the free cutting surface. The molars of both the upper and the lower jaw are often much swollen as their crowns lie in contact with the gum; and stunted cusps are seen rising abruptly and irregularly from the grinding surfaces. The prevalent views concerning the significance of such teeth are, in the first place, that they result from the poison of syphilis acting on the tissues before the birth of the child. Mimetic forms may take their origin during an attack of scarlet fever at a time when the teeth are not yet perfectly developed. It would appear that if a form of tooth could not be accounted for in such a case by the history of syphilis or of scarlet fever, the cause must lie in conditions common to both of these diseases. At the same time, it is assumed that this factor is an inflammation.

If this be conceded, a careful inquiry into the clinical history of the patient who exhibits these deformed teeth should elicit an account of inflammation of the structures of the face occurring at an early period of infancy, or of certain lesions about the face which would indicate that an inflammation had existed in the pre-natal period. But, in point of fact, in some examples the most careful inquiry of parents and nurses, the most exhaustive scrutiny of the parts in the newly born, do not sustain the conclusion that these deformities are due to inflammation.

In this connection allow me to describe a case in which, from all the evi-

dences, it appears that the Hutchinsonian, or an allied deformation, may occur in a child in whom all the evidence of syphilitic taint, or of lesions from scarlet fever, are absent.

A lad in his tenth year lately came under my observation for difficulty arising from oral respiration. He was the son of respectable parents. The father denied the taint of syphilis, and did not exhibit, upon careful examination, any sign of the disease. The child's mother died of phthisis a short time after his birth, and he had been brought up most carefully and intelligently by a nurse, who is acquainted with his clinical history from the time he was born. The child has always been delicate, especially in the functions of digestion and assimilation of food; but there was entire absence of the ordinary signs of syphilis. There was no deformation on the top of the head (which has been described as natiform). There were no fissures in the skin at the nostril, or at the angles of the mouth; no cloudiness of the cornea; no traces of previous eruption on the skin, nor evidence of periosteal disease.

At the fifth year it was observed that oral respiration became established, and there was also a disposition to "take cold" easily.

Examination of the pharynx revealed the presence of a large adenoid growth pendant from the roof. The palatal arch was high and narrow; the obstruction to nasal respiration was absolute. The nasal septum was irregular, apparently due to enormous thickenings of the maxillary crests. The teeth presented all the characters of the Hutchinsonian deformity, excepting, only, that the lateral incisor teeth were not pegged.

After the removal of the adenoid growth, nasal respiration was reëstablished.

Now what, in all probability, has been the order of events in this case? The clinical condition which brought the child under my care was not announced until the fifth year. Evidently this was not the first factor. So far as the shapes of the crowns of the teeth are concerned, they must have arisen at a period certainly not later than at the time when the enamel organs and the dentine bodies were being adapted one to the other. In a word, the shapes of the teeth, as seen at the tenth year, were congenitally deformed. Secondly, the maxilla, especially in the alveolar region, must have been changed by the presence of these malformed teeth. It is scarcely likely that the establishment of oral respiration at a period so late as the fifth year should cause an elevation and narrowing of the palatal arch and hyperostosis of the maxillary crests. If this position be accepted, a narrowed, high, palatal arch, with thickened alveolar processes, would be just as apt to arise because of pre-natal forces (the same that caused the deformation of the teeth) as to be created by the establishment of oral inspiration. We have leaned too much toward the faulty function last named, in attempting to explain this deformation, and not enough, at least in my judgment, to causes which are in operation at the time the teeth are being developed in the maxilla.

On Taste and Smelling.—An interesting study in the connection between the mouth and other divisions of the cephalic mucous tract relates to the senses of smelling and of taste. It is well known that disturbances in nasal respiration interfere with both of these senses; the habit of oral respiration is fatal to their efficiency.

The following case is an illustration of the effect upon consciousness and mental judgment concerning these sensations in an individual in whom, owing to a congenital osseous nasal obstruction, neither taste nor smell had existed prior to the twenty-sixth year.[1]

[1] I am indebted to my friend, Dr. Conrad Behrens, for the opportunity of studying this case.

The patient was a married woman, intelligent, but of limited education. She had never breathed through the nose. The palatal arch was narrow and very high. The teeth were irregular. The second bicuspid tooth on the right side had never been erupted. The first molar of each side was ellipsoidal.[1] The thorax exhibited the appearances which accompany the habit of oral respiration.

Examination of the pharynx showed absence of adenoid masses; while the choanal planes were small, oval, and entirely occupied by firm resistent structures which appeared to be osseous in character.

She consented to have an operation performed with the object in view of establishing nasal respiration. This was accordingly done May 2, 1888.

Large burr-drills were used to break down the osseous structures on each side of the vomer, and two openings, fully equal to a circular aperture one-fourth of an inch in diameter, were secured. These openings represented the exact width of the choanal spaces. Additional width could not be obtained, since at each aperture the vomer was on one side, and the internal pterygoid plate on the other. The patient did well, with the exception of a traumatic fever, which disappeared on the fourth day. Owing to the swelling of the mucous membrane incident to the operation, there was no nasal respiration until the sixth day.

On this occasion the patient was lying on a lounge in her chamber when she detected that she could breathe through her nostrils. Instantly something agreeable and novel impressed her consciousness. She arose from the lounge, and, testing the different articles in the room, found that the new sensation had been excited by a banana which was lying on a table near by. She ate some of the fruit. The taste of the banana and its odor were associated in her mind as one and the same thing. She called to her sister and told her that she could now smell and taste, and immediately began to examine a variety of substances, being guided by her sister's knowledge of their properties. As soon as the condition of her health permitted, she found great satisfaction in taking walks in the street, and, when meeting with any distinctive odor, would request her companion to name it for her. In this way, in a surprisingly short time, she became familiar with the more common odors and flavors. The report of these facts, unfortunately, came to me too late to receive from the patient the first impressions of an experience so novel; but on the tenth day after the senses were restored, I made a few observations and subsequently extended them with the following results.

Assuming that the agents which impress the senses of taste and smell are salines, saccharines, acids, bitters and aromatics, I tested her with examples of such substances. I first employed table salt. To my surprise, she stated that she had always been fond of adding salt to her food, although she had never tasted it; but since the operation the dishes of which she formerly partook (which had been heavily salted) now became repulsive. When tested with other salines, such as sodium phosphate and potassium nitrate, she said that they were the same as salt. Of the saccharines, she recognized licorice as something she had tasted before the operation. The patient had been fond of eating candy, apparently on account of the essential oils used in flavoring, and not because of the sugar. Solutions of acetic acid were not recognized. Prior to the operation she had never cared to add vinegar to her food in the quantities in which it is usually used as a condiment. A solution of sulphuric acid—twenty drops to the ounce—and a second of hydrochloric acid of the same strength, were reported to be slightly "bitter." A solution of nitric acid, also of the same strength, was found to be "disagreeable."

[1] By the ellipsoidal tooth I mean a first upper molar whose crown forms an ellipse-like figure, and whose longitudinal axis is not parallel to the dental arch but defines an angle with it. The roots are confluent. The second and third molars are always tritubercular or monotubercular.

The impressions made by bitters was uniformly unpleasant, with the odd exception of quassia, which she did not describe as a bitter. Chiretta was declared to be something she had had before the operation, a statement which was also made in respect to peach kernels. A diluted solution of strychnia was described as "bitter." The term "bitter" was vaguely used, and appeared to be a synonym of "unpleasant" and "disagreeable."

Interesting facts were found in the group of the aromatics. The patient at once recognized oil of cloves and named it. Some years before she had had a carious tooth stopped with it. She stated that prior to the operation a distinction was appreciable between the impressions made by tea and coffee, but that since the operation she could detect degrees of flavor in the different grades, and that the appreciation of these flavors gave her pleasure. Inhaling oil of rose in bulk was found to be unpleasant, but a spray of the oil thrown on the handkerchief was agreeable. The operation being performed before roses were in bloom, the patient did not at first recognize the odor of the oil, but afterward she stated that she had taken pleasure in holding a full-blown rose in her mouth. Cinnamon was recognized; she had appreciated the impression made by it when introduced into food. The flavor of spirits of lemon was immediately associated with that of lemon peel. Oil of gaultheria was novel but not agreeable; she said it "smelt bitter." Creasote was not novel. When informed that the odor might have been detected in partaking of smoke-cured ham, she replied that she at one time lived on a farm, where hams so preserved were occasionally served.

Among volatile agents it was found that the application of "smelling salts" (ammonium carbonate) to the nostrils was recognized, but she declared that before the operation she could never get relief, as did others of her aquaintance, from using this agent for headache. Nitrite of amyl was novel, and suggested the odor of sulphuric ether, which was administered at the time of the operation. It was pleasant, and was the only agent which she requested to be allowed to inhale a second time. Valerian was novel and agreeable. She expressed surprise when informed of its nature, for she had repeatedly taken valerian before the operation. When a solution of hydrochlorate of cocaine was applied to the nostril, she asserted that it "smelt bitter." This was a favorite expression when substances impressed consciousness unpleasantly; if pleasantly, they were said to "smell sweet."

One of the most curious results obtained by the operation was that the sensation of hunger was for the first time experienced. She stated that prior to the operation she had never had any appetite for food, and that the list of articles which she now enjoyed was much larger than before. She named, especially, in this connection, cabbage and tomatoes, which she never could partake of before the operation, but now enjoyed. None of the odors of cooking were ever before appreciated; they were now easily detected. The odor of raw meat was much less decided than that of cooked meat.

The patient passed from observation (evidently not taking the interest in the investigation that I did) before I was in a position to extend the range of the tests.

It would be of value in a similar case to determine in what manner a number of the agents employed had been appreciated, in one way or another, before the nasal chambers had been opened. It is quite evident that prior to the operation distinctions were detected among the substances which subsequently were found to have odor or flavor.

In this imperfect account the following statements may be tentatively accepted. First, that the senses of taste and smell, after they have remained dormant for twenty-six years, may be suddenly awakened by restoring the respiratory functions to the nasal passages. Second, that a variety of substances, which in normal consciousness possess both odor and flavor, can impress in a specific manner the tactile sense in the absence of nasal respiration. Thus rose-leaves and the oil of cloves, pyroligneous substances in smoke-cured meat, tea and coffee, were appreciated through their effects on the tactile sense, when no sensation of taste was present. Third, that when taste was restored, these agents were recognized, but in a different manner than before, as if something had been superadded to the primary impression. The essential oils may have slightly irritated, or, as in the case of oil of cloves, may have induced an analgesic effect. In the instances of tea and coffee, while the distinction between the two agents prior to the operation may have been due to the sensation of touch, when the sensation of taste was superadded the grades of these substances could be for the first time detected. Fourth, that the recognition of volatile substances, such as sulphuric ether, etc., before the operation, was probably due either to the cooling effect they exerted upon the mucous surface, or to the impression made upon consciousness by absorption.

If I have called attention in the above remarks to the commonality of the various parts of the cephalic mucous membrane, and especially if I have shown that clinical studies in the regions of the mouth, the throat, the nasal chambers and the ears are gleanings in the same natural field, I will have presented my best excuse for dwelling upon these themes. A saying of the Dutch occurs to me in this connection: "How it looks to the man on the banks of the canal." One can imagine an honest burgher standing at ease on a canal's edge, while the ships go to and fro as the carriers of Holland's great trade, seeing many things on the decks and in the rigging which are little thought of by those on board. Each one of us in respect to another's work is as a man on the banks of the canal. He may possibly help those who are differently placed to himself.

THE TREATMENT OF STRICTURE OF THE MALE URETHRA.

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To consider philosophically the treatment of urethral stricture, we should first have a clear idea of the exact pathological conditions which are to be overcome. Definitions are rarely at the same time comprehensive and precise, but it is probably a close approximation to the truth to describe stricture as *an abnormal lessening of the calibre or the dilatability of the urethral canal associated with changes in the mucous, muscular or submucous structures constituting its walls.* This definition includes the following chief varieties of stricture, taking them in the order of their clinical importance: (1) inflammatory; (2) spasmodic; (3) organic.

(1) The existence of inflammatory stricture has been denied by eminent authorities, who assert that without congestion of the prostate, spasm of the circular fibres or pre-existent organic stricture, no swelling of the mucous membrane alone is competent to give rise to retention of urine. While I believe this to be true, it cannot be disputed that occasionally in cases of acute anterior urethritis, with no suspicion of previous stricture, and with the prostate unaffected, we have great diminution in the size of the stream of urine, manifestly from the unnatural approximation of the swollen urethral walls. Although the condition is almost always of short duration, and never goes on to retention, it is often the first step in the formation of organic stricture. The treatment is that appropriate to the form of urethritis in question.

(2) Spasmodic stricture depends on a contraction of the muscular fibres surrounding the urethra, either the unstriped or the compressor urethræ, and is always due to some irritative cause, direct or reflex, often aided by such predisposing causes as the uric acid or oxalic diathesis, sexual plethora or excess, etc. It sometimes depends upon and complicates organic stricture situated in advance of the seat of spasm. It is exceedingly common, after operations upon the anus and rectum, as in cases where hemorrhoids have been tied, and occurs much more rarely from reflex irritation from a greater distance, such as coxalgia, dislocation of the hip, fracture of the thigh, etc. The immediate treatment consists in the use of a warm bath, the administration of morphia or atropia, preferably by the rectum or hypodermatically, the use of diluent drinks, and, of course, the removal of the exciting cause if it can be discovered.

(3) Organic stricture is always the result of some antecedent injury or disease; in the vast majority of cases it is due to a previous urethritis, and is especially apt to follow those cases in which the urethral inflammation has reached an exceptionally high grade of intensity, or, still more, cases which have run a very protracted course. The pathological condition varies from an

induration and thickening of the mucous membrane with connective-tissue proliferation occurring in its depths to the formation of a dense mass of cicatricial tissue occupying the submucous region and extending into the meshes of the corpus spongiosum. The strictured portion of the urethra varies greatly in extent from a mere cord-like band, the so-called *linear* stricture, to one slightly broader (*annular* stricture), and from that to a contraction which may involve as much as two or three inches of the canal, converting it into a devious irregular channel. This has been called the *tortuous* stricture. Many classifications have been adopted, but this answers very well for practical purposes.

The situation of a stricture also varies greatly, but there can be no doubt that the great majority are to be found in the bulbo-membranous region which includes a space from about one inch in front of the anterior layer of the triangular ligament to the prostato-membranous junction. The next most frequent seat is in the first two and a half inches of the urethra, and the smallest number are found in the middle of the spongy urethra. These remarks apply to the forms of stricture produced by urethritis. Traumatic stricture usually affects the membranous urethra, and it is asserted that stricture produced by masturbation is to be found, as a rule, in the same region. As a matter of fact, however, strictures from this latter cause are exceedingly rare. This is shown by the comparative infrequency of strictures among adult males of any community as compared with the number who have at some period of their lives been addicted to the habit of masturbation, and still more forcibly by the history of persons in prisons, asylums and hospitals for the insane, who have been known to practise the habit to excess over long periods.

Some years ago, while acting as medical officer to the Eastern Penitentiary, a prison containing about 1,000 convicts, and conducted on the principle of separate confinement, I began some observations upon the urethræ of those prisoners who were known to be persistent masturbators. I abandoned the investigation, on account of the impossibility of eliminating other causes of disease, particularly gonorrhœa; but it was perfectly clear that among that class of prisoners there was not an unusual number of coarctations; and I do not think masturbation a sufficiently active or efficient cause for their frequent production. If it were a cause, the effects would surely in a certain proportion of cases be more serious and more noticeable; if it were capable in nearly every case, as has been claimed,[1] of producing one stricture of large calibre, it would sometimes be followed by several strictures of smaller calibre. The institution alluded to is one which affords exceptional advantages for the study and observation of onanism and its effects, and the subject was one in which I was specially interested; but I do not remember, during my experience of three years, ever to have seen in a confirmed masturbator retention or incontinence of urine, frequent or difficult micturition, or any of the more marked symptoms which would usually accompany stricture of the urethra. Neither have I learned that those physicians who have charge of the insane, and who see large numbers of onanists, have ever made similar observations.

If stricture is no more common in such patients than among their associ-

[1] S. W. Gross, Medical and Surgical Reporter, May 5th, 1877.

ates, it may safely be assumed that, at least as ordinarily practised, masturbation can only be productive of organic stricture with such rarity as to make it scarcely worth considering as an etiological factor. The dictum of Sir James Paget may still be said to express the view of the profession—namely, "that masturbation does neither more nor less harm than sexual intercourse, practised with the same frequency, in the same conditions of general health, age and circumstance."[1]

Strictures are further divided into *irritable*, when they are readily inflamed and bleed easily upon the touch of an instrument, and *resilient* when they are elastic and contractile, returning with great rapidity to their former size after being dilated. They are also divided into those of small calibre, which may be arbitrarily assumed to include strictures which will only admit instruments less in circumference than 15 millimetres, and those of large calibre, or strictures which will take instruments from that size upward.

These preliminary remarks are necessary to a consideration of the proper method of treating strictures, as is also some inquiry into the functional importance of strictures of large calibre. That every urethral coarctation following on urethritis must at *some* time have been a stricture of large calibre is self-evident, but just when such a stricture becomes an active pathological factor, and is able to give rise to symptoms, is an unsettled point. Indeed, it is not probable that it ever can be definitely determined in a mathematical sense. The idea that any particular, fixed calibre represents the normal condition of the urethra has long ago been abandoned, the observed variations of that canal being such that no special dimensions can be assigned to it as representing the precise dividing line between health and disease. The old method of regarding the size of the meatus as an indication of the normal calibre of the canal behind it, is also unquestionably fallacious, it having been conclusively shown that no more definite relation exists between them than between any other mucous canal and its corresponding outlet, the mouth and the œsophagus, for example, or the anus and the sigmoid flexure. That there is a certain correspondence between the size of the urethra and that of the flaccid penis, is true, the calibre of the one increasing with the circumference of the other, but that this ratio is present in any absolutely unvarying manner has not yet been demonstrated. At the most, the size of the penis may be said to furnish a general indication of the urethral dimensions, but one which is approximate merely. On the other hand, it has been shown that there are usually certain normal variations even in the spongy portion, and that it is impossible with any of the means at our command to distinguish between these natural irregularities and coarctations of equal calibre due to incipient stricture.

Those surgeons who follow the teachings of Dr. Otis, of New York, whose valuable work has added greatly to our knowledge of the subject in question, accept his scale of relation of the calibre of the urethra to the circumference of the flaccid penis, any interference with which they regard as evidence of the existence of stricture. The figures which Dr. Otis gives, while they doubtless represent accurately the *distensibility* of the male urethra, do not by any means

[1] Clinical Lectures and Essays.

represent what can fairly be called its normal calibre, and fail altogether to recognize the fact that there are points of physiological narrowing, notably along the course of the pendulous urethra, where some of his disciples find the greatest number of contractions. Sir Everard Home, DuCamp, Reybard and others long ago demonstrated the variations in size and dilatability of the different portions of the urethra, and Civiale observed that in the middle of the spongy urethra there is a notable diminution of elasticity. Weir and Sands, of New York, confirmed by casts of the urethra these older observations, and there can now be no doubt of the existence of such physiological points of constriction, or of diminished distensibility. Otis in effect assumes that the urethra should be a tube of uniform calibre, at least anterior to the triangular ligament. The ingenious instrument which he has devised, the urethra-meter, when used under the guidance of Otis's table, will detect apparent strictures in the majority of normal urethras, and is to-day only employed by practical surgeons in exceptional cases.[1]

The most valuable urethral instruments for the purpose of diagnosis are the so-called *bougies à boule.* They may be made of metal with slender stems, having small expanded ends or handles, upon which the number of the instrument may be marked; this should represent in millimetres the circumference of the shoulder of the bulb. More satisfactory instruments are, in my opinion, the flexible gum *bougies à boule.* The shoulder of the acorn-shaped bulb should join the shaft at almost a right angle, and not with the large obtuse angle often found in improperly-shaped instruments. The size selected for exploration should be determined approximately in the manner already mentioned, by noting the circumference of the flaccid penis. The scale which I have adopted for use, and which differs from that published by Dr. Otis in giving a lower grade of numbers, is as follows:

A penis three inches in circumference, at the middle of the spongy portion,

[1] Ranney, after quoting the statistics of three surgeons, accumulated within a very short time, adds: "Such an enormous number of operations—over 1,300—from so few sources would in itself suggest that if the operation has been justified, the general public has in the past been wofully neglected by the surgeons. But when we take into consideration that the instrument makers are selling this instrument to nearly every new graduate in medicine, who are often too anxious to test its merits and equal their predecessors in the number of cases reported, the conservative element may well question if by its indiscriminate use surgery is not rapidly being brought into disgrace."—(*New York Medical Journal*, August and September, 1880.)

A very ingenious instrument, the "urethrograph," has been invented, and is said to be capable of giving an exact drawing of all the irregularities of the urethra. Keyes says: "It seems an ideal mechanical device, but its creation is to be deplored, since it will tend to increase the already too great cutting of that patient canal—the urethra. Already the young genito-urinary surgeon (and every village has one or more), in connection with every possible genital or urinary disorder, cackles with self-complacent surprise when he finds that one portion of the urethra is narrower than another (forgetting that the canal has these irregularities naturally), and at once proceeds to cut them, proposing to commence by bringing the urethra up to a uniform size, and then seek further, if his patient does not get well or becomes disgusted with the treatment. This instrument will, I fear, lead to still more routine, unintelligent surgery in the hands of careless practitioners."—(*Annual of the Universal Medical Sciences*, 1890, E. 13 to 14.)

indicates a urethra which should normally admit an instrument of about 26 to 28 millimetres in size; when it is 3¼ inches, the urethra should have a calibre of from 28 to 30 mm.; 3½ inches, 30 to 32 mm.; 3¾ inches, 32 to 34 mm.; 4 inches, 34 to 36 mm., beyond which size it is seldom necessary to go.

If the meatus be too small to admit of the introduction of a bulbous bougie of the required size, it should be enlarged. The penis should then be grasped just behind the corona and held gently between the thumb and finger of the left hand, the foreskin, if redundant, having been retracted. The dorsum of the penis should face the abdominal wall. The bougie, well oiled, should then be passed gently into the bladder. If arrested, the point on the shaft corresponding to the meatus should be marked, the distance from that to the bulb representing the position of the anterior face of the stricture. If that instrument, or a smaller size, passes through, it should then, after a moment's delay, be withdrawn, and if during its outward passage any contraction is found other than that at the triangular ligament (which has been shown to be normal), it is probably due to stricture—though spasm, which often relaxes after a few seconds, or shifts its position in the canal, as measured from the meatus, may give rise to errors in diagnosis. It cannot always with certainty be recognized.

By this smaller scale the probability of mistaking physiological narrowing for stricture is greatly diminished, and I believe that cases which present definite symptoms, such as gleety discharge, frequent urination, dribbling at the end of micturition, etc., and in which such an examination discloses a distinct contraction, may with propriety be considered as cases of organic stricture. This is not unduly conservative, but represents fairly, I think, the views of the large majority of modern surgeons, and especially of those who have any claim from special study or experience to speak with authority on the subject of genito-urinary diseases.

I have myself always emphasized the pathological importance of the so-called strictures of large calibre, but have never been able to accept fully Dr. Otis's views, either as to diagnosis or as to treatment; nor, as far as I know, have they been so accepted by the majority of genito-urinary specialists in this or in any other country,[1] although they have been of great value as showing the distensibility of the normal urethra, as thus paving the way for the introduction of the large instruments employed in litholopaxy, as bringing out the full

[1] Keyes says: "I have raised my voice for what it may be worth in protest against the views of the new school in urethral pathology, which seems to claim that every natural undulation in the tissue of the pendulous urethra is a stricture fit for cutting, and that all the ills of the genito-urinary passages may be accounted for by the existence of these undulations, and usually made to disappear when the latter are cut. The theories of the new school are as ingeniously perfect as the instruments which carry them out; but, unfortunately, its claims seem to leave out of view that the disease for which the patient seeks relief is only a symptom, and that such symptoms may be due to a variety of causes. What will cure a symptom in one case, will not necessarily do so in another. And a serious criticism upon the methods of the new school is that it does not generally, in its lists of published cases, give any prominence to those cases which *have been cut without relief* of the symptoms complained of.—(*New York Medical Journal*, August and September, 1880.)

pathological value of true strictures, however slight, and in other minor particulars adding exactness to urethral surgery. It is not against their use, but against their abuse, that I protest.

We may now consider the treatment appropriate to the different varieties of organic stricture.

(1) *Strictures of large calibre, that is of more than fifteen French, situated at or behind the bulbo-membranous junction.*

The stricture having been located and measured by the bulbous bougie in the manner above described, a conical steel sound, a few sizes larger than the bulb which has passed the stricture, should be sterilized by heat or by a carbolic lotion, or at least thoroughly polished by friction with a clean towel, and after having been warmed to the temperature of the body and oiled with 1 to 40 carbolized oil, should be carefully introduced through the stricture.

If the instrument is used with ordinary care and gentleness and has been properly sterilized, and if in passing it through the deep urethra, the fingers of the left hand of the surgeon are used as a fulcrum in the perineum, and the long end of the lever is depressed with slowness, while the conical point representing the short end is made to follow accurately the subpubic curve of the urethra, the production of prostatitis, epididymitis, or urethral fever, the three most common complications of rough or clumsy instrumentation, will follow with the extremest rarity. In the majority of cases these complications are due to the use of force in the introduction of the bougie (when it practically becomes a divulsor, and is very objectionable); or to a slovenly disregard of antiseptic details in the use of urethral instruments, which is not uncommon even among those who talk largely of the importance of antiseptics. It is not an exaggeration to say that I pass steel sounds in my office in cases of various forms of urethral disease more than one thousand times annually, as I employ them in the majority of gleets and chronic gonorrhœas, irrespective of the presence or absence of coarctations, and, in fact, regard their use as the most valuable prophylactic measure against stricture which we possess. During the last twelve months I have not had a single instance of either of these accidents or of any other.[1]

[1] The following quotations from a recent article on this subject will serve as an illustration of the great exaggeration as to this and other points, which seems to have been peculiarly frequent in the history of the controversy over this matter, and which is most undesirable, and, indeed, reprehensible, in a scientific discussion of a question involving human life:

"Many of us have seen epididymitis, cystitis, abscess of the prostate and prostatorrhœa, resulting from the passage of the bougie, both in the hands of the surgeon and of the patient. None of these troubles have I ever seen follow an internal or external urethrotomy properly done. We will admit that in nearly all cases of stricture treated by gradual dilatation, whether the stricture be in the pendulous urethra or further back, the bougie is passed into the bladder; in fact, the instrument is forced into the urethra up to its hilt by depressing the handle well between the thighs, and is not spoken of as dangerous treatment when compared with urethrotomy. The mediate danger of this manner of treatment I am very certain is of considerable moment, while that of urethrotomy is nil."

I would like the reader to contrast the assertion contained in the last paragraph with the following extract from a debate which took place before the surgical section of the Suf-

Sometimes a few drops of blood will follow the withdrawal of the instrument. Usually the next act of urination will be slightly painful, and often the gleety discharge, which has caused the patient to seek treatment, will increase for a day or two. The use of an instrument in this manner is always followed

folk District Medical Society, in Boston, in December, 1887 (*Boston Medical and Surgical Journal*, December 29, 1887):

Dr. E. W. Cushing: "I would like to ask what the mortality is supposed to be of internal urethrotomy in private practice? It seems to me that we are to distinguish a little between what is proper to do in a hospital, in cases who are suffering and are going away, perhaps to sea, and other cases, such as Dr. Greenough refers to, in private practice. I think most men would hesitate, if they were getting comfortably along, if anyone were to tell them squarely that there is a mortality of 1 or 2 per cent. in stricture operations. I would like to know what the danger is in private practice, as distinguished from those old cases which bring up the mortality."

Dr. F. S. Watson: "In the figures that I quoted, in some of the instances, I believe those of Otis, Weir, Bull, McBurney, in Dr. Tilden's cases and my own and a number of others, the operation has been largely confined to private patients. I have never operated upon a patient without telling him that he had two chances to die in a hundred."

Watson's figures (collected by an advocate of the operation) show fifty-two deaths in 2,540 cases, or 2 per cent.; but they include the statistics of all the extremists, whose operations were often on physiological narrowings, and therefore in patients with sound urinary tracts. There is not a more able or skilful genito-urinary surgeon in Europe than Guyon, and his experience is simply enormous, but we find that he had twenty deaths in 459 operations, or about 4.1 per cent.

Stein places the mortality in internal urethrotomy of the penile urethra at from 2 to 5 per cent.—(*Transactions of the American Association of Genito-Urinary Surgeons*, 1889.)

Another paragraph or two may be selected from many of the same tenor, which could be collected from the writings of competent surgeons:

L. Ranney, after an elaborate inquiry, concludes that "The operation of incision into the walls of the urethra greatly increases the percentage of danger, when compared with the results of dilatation, and that the proportion of those complications which have been enumerated (hemorrhage, rigors, suppression or retention of urine, curvature of penis, etc.) to the total number of patients cut is relatively greater than is usually supposed."—(*New York Medical Journal*, August and September, 1880.)

Professor Sands, of New York, says: "I have heard of a number of cases where death has resulted from the employment of the dilating urethrotome. . . . I can state with authority, however, that three fatal cases of operation with the dilating urethrotome have lately happened in our city hospitals, two of which occurred last week in one hospital. . . . In two of these cases death took place from pyæmia within a week of the operation. In the third case death occurred from uræmia on the sixteenth day after the operation, which was performed for the division of an anterior stricture, which was so slight as to be detectable only with a bulbous sound, No. 24, F."

Duplay (*International Encyclopædia of Surgery*, p. 472) says: "Urethrotomy may be complicated with serious accidents, which may cause death. *Hemorrhage* always occurs, sometimes abundant enough to endanger the life of the patient. *Urinary infiltration* is but rarely observed, doubtless because of the precaution which most surgeons take, after having incised the urethra, of retaining in it a catheter. In some rare cases the edges of the incision, instead of quickly uniting as is usually observed, remain separated, the one from the other, and there is found at this point a true cavity, which Voillemier, who has seen a number of examples of this complication, has designated by the name of "urethral pocket." Urethrotomy may also be complicated with more or less grave *urinary fever*, sometimes followed by rapid death. Finally *erysipelas*, *phlebitis* and *purulent infection* have been seen to follow internal urethrotomy, and likewise constitute serious complications of this operation."

by a slight and transitory hyperæmia of the region about the stricture during which period in many cases, particularly recent ones, appreciable softening and absorption of stricture tissue occur. This period lasts for from three to four days, and only when it begins to subside should the instrument be reintroduced. Ordinarily, an advance of one or two numbers of the French scale may be made each time, but occasionally the same instrument must be introduced at several sittings before it can be exchanged for a larger one. This should be determined by the degree of resistance experienced during its introduction, the pain which it excites at the time and subsequently, and the presence or absence of bleeding. Personal experience soon becomes the best and safest guide as to the degree to which dilatation may be carried at any particular sitting. The feelings of the patient should always be consulted. When the full size has been reached (following the table given above as an approximate guide), the symptoms will usually disappear, and after this it is only necessary to carry on the dilatation at longer and longer intervals to maintain the cure. Most surgeons whose patients are of average intelligence have no difficulty in teaching them to use such an instrument for themselves, and the great majority of my patients do so without the least discomfort or inconvenience. A certain proportion of cases under this plan of treatment will get entirely well, so that years afterward no trace of stricture can be discovered. Others, if the intervals between the introduction of the sound are too long, will have slight recontraction, evidenced possibly by a recurrent gleet, but the rule is that with ordinary care a *practical* cure is attained by this method in the great majority of cases. Its advantages are obvious, and have for many years held for it the first place in the estimation of those surgeons whose aim is to effect a cure, or at least cause the disappearance of all symptoms, while at the same time they minimize the danger and inconvenience to the patient, who even in those cases in which an entire cure is not brought about, remains by this method master of the situation.[1]

[1] Dr. Taylor, at a recent meeting of the American Association of Genito-Urinary Surgeons, said that he thought the great majority of soft strictures could be cured by a slow intermittent course of gradual dilatation. This treatment took much time, and many patients would not faithfully follow it. When, however, it could be carried out, a permanent cure would result in many cases. After gradual dilatation, urethral fever was unlikely to occur. Even in a case of penile stricture, there were many that could be cured with a straight sound, aided by pressure and manipulation of the stricture over it. Dr. Keyes agreed with Dr. Taylor as to the value of dilatation, and considered the operation of cutting as one of necessity to be used only in cases of exigency. He was sure that moderate strictures were cured by dilatation. Bryson heartily indorsed the method of dilatation in treating strictures, characterizing it as the ideal way and the one procedure that could not be eliminated from any method we adopted for the treatment of these lesions which it sometimes cures."—(*Jour. Cutaneous and Genito-Urin. Dis.*, July and August, 1889.)

Duplay describes process of cure by dilatation as follows (*International Encyclopædia of Surgery*, vol. 6, p. 465–466): "The introduction of a bougie into a stricture, which it fills without causing laceration, is accompanied by certain phenomena. There is felt, at the end of a few minutes, a difficulty in withdrawing the instrument. Soon the spasm disappears, and movement of the bougie becomes easy again. Afterwards a muco-purulent discharge is established in the canal, and one is surprised to find that the stricture permits the passage of a much larger bougie. The enlargement obtained is evidently not the effect of the press-

In contrast with this we have presented the claims of *internal urethrotomy*, the merits of which are somewhat extravagantly vaunted by its advocates, while its undoubted dangers are, as I have shown, sometimes ignored. I do not by this mean so much the danger to life itself, although that exists in a definite percentage of cases, but refer rather to the curvation of the penis, the excessive hemorrhage, the defective expulsive power causing dribbling after urination, etc., which not infrequently follow extensive urethrotomy.

It must be remembered that no special advantage is claimed for this operation unless it *is* extensive, the figures of Otis being usually adopted by the few practitioners who habitually employ dilating urethrotomy in stricture of large calibre. I am justified in saying that as applied to the class of strictures under consideration (those of the deep urethra), the operation is not believed by the profession nor by the great majority of those having special experience in genito-urinary disease to be either safe or curative, and the unpublished evidence of both its dangers and its failures in the hands of some of those who make the greatest pretense to its successful employment has been quite sufficient to convince anyone who is in the way of hearing it of the inapplicability of internal urethrotomy to these cases.[1]

(2) *Strictures of large calibre occupying the pendulous urethra.*—In this region all the risks of cutting operations are much reduced, and if scrupulous attention to antiseptic details be observed, need scarcely be considered. The probability of permanent cure seems also to be correspondingly increased. These statements are borne out by the experience of many independent and unprejudiced observers; and the greatest differences of opinion which exist at present as regards these strictures have reference rather to their diagnosis, the frequency of their occurrence and their pathological importance than to their treatment. The physiological variations in the calibre of the normal spongy urethra are, as I have already said, quite considerable, and this fact, when taken in conjunction with the excessive estimate of what constitutes normality, serves to explain the

ure exercised by the bougie, since this was in nowise tightly grasped; it is the result of the inflammation excited in the stricture by the presence of a foreign body. By the action of bougies of gradually increasing size the work of resorption continues, the contractile elements *atrophy*, and the urethra ends by resuming its normal calibre."

[1] Ranney says (*op. cit.*): "The deformity of curvature of the penis is often spoken of by the advocates of urethrotomy as a trivial and temporary annoyance, and of but little consequence; but in my experience it sometimes proves permanent, and always creates a feeling of annoyance and disgust on the part of the patient, which it is difficult to appease. I have collected from private case books in this city the records of some 200 operations which have never been reported. I find by analyzing them that a large percentage of patients have been cut for what have been diagnosticated as reflex troubles, such as lumbago, sciatica and plantar neuralgia, and that in most of the other cases chronic gleet was taken as the indication for surgical interference. In a remarkably small percentage of these cases was the contraction sufficient to impede the flow of urine, or probably to render it evident to the patient that a stricture existed, unless first so informed by his physician. It is greatly to be regretted that in the larger proportion of the cases which I have been able to reach, the details as to the situations of the stricture, its length and calibre, the severity of the symptoms complained of by the patient, and the previous methods of treatment employed for the relief of these symptoms, are either so given as to be worthless for comparison or are entirely omitted."

incredible number of strictures found in this region and operated upon by a few practitioners.

It is impossible to read their statements as to the number of cases of this kind which they have cut and the number of strictures which they find in individual cases, and to recall at the same time the almost entire absence of post-mortem evidence in support of their views, without being led to question either their surgical judgment or their statistics or both.[1]

As to the diagnosis of strictures of large calibre, even the *bougie-à-boule* may be misleading, if used in the deep urethra, on account of the normal points of obstruction to both its introduction and withdrawal which are there met with while the urethra-meter is similarly misleading in the pendulous urethra, especially if its revelations are interpreted according to the unnecessarily large standard of Otis. In the latter region the normal variations account satisfactorily to my mind for that proportion of the statements of a few writers and would-be teachers on this subject, which may charitably be put down to self-deception. In the deep urethra it has been necessary for them to account for their frequent discovery of strictures even in cases without antecedent history of venereal disease by constituting masturbation an active etiological factor. I have already expressed my opinion as to this point, and I may add that some years ago I endeavored, I believe successfully, to demonstrate that the "deep-seated stricture usually of large calibre found at the subpubic curvature and its vicinity," and described as "an essential lesion of masturbation,"[2] was in reality the point of normal resistance to the withdrawal of bulbous bougies offered by the posterior layer of the triangular ligament.

[1] Keyes makes the following interesting remarks as to this point: "Otis emphasizes the well-known fact that interference with the deep urethra involves an element of danger from which surgical manipulation of the pendulous urethra is nearly exempt, and he urges that no instrument shall be passed into the bladder, and that anterior stricture shall be first dealt with. This rule is well enough, unless viewed from the standpoint that any spot in the front urethra narrower than any other spot is a stricture. Such a generalization prevents investigation, which often cannot be properly carried out without passing an instrument as large as will go into the bladder itself. If the point of moderate physiological narrowing in the middle of the pendulous urethra is considered a stricture, routine surgery seems inevitable, and a man who urinates too often will have his urethra cut when he may be suffering from stone in the kidney or bladder, from chronic pyelitis or other malady; and I have known this to have been done in many instances.

"A patient recently applied to me with shreds of pus, long and in clumps, and enough free pus in the urine to make it resemble sweet cider. He urinated with pain every two hours, night and day. There was mild gleet.

"The case was one of prostatorrhœa and cystitis of the neck. This gentleman assured me that nine months previously, with the same symptoms, he had applied to a surgeon who passed a bulbous sound, and assured him that he had five anterior strictures which must be cut. The surgeon said it was not right to explore the deep urethra, because this was dangerous. The cutting was done, but the promised cure did not follow. Other anterior strictures were then discovered, and cut again and again, five times in all, during nine months, the surgeon making no further investigation and always declining to look into the condition of the deep urethra. Finally, at a given visit, the surgeon again introduced the bulb, and after carefully pulling it out exclaimed: 'By Jove! you've got eight strictures yet.' The patient declined to have these cut, sought other advice, and recovered almost entirely from his symptoms after a few weeks."

[2] S. W. Gross. Op. cit.

The prostatic urethra being at once more movable and more dilatable than the membranous portion, the bulb slips smoothly along it until the point is reached at which this layer of fascia closely embraces the posterior part of the membranous urethra and the outer surface of the prostate. Here, for obvious reasons, it is arrested, and it is at this moment that the deceptive sensation which may be considered indicative of the existence of organic stricture is communicated to the hand. A series of observations and dissections upon the cadaver confirmed me in this view, which was originally purely theoretical, and moreover eliminated the possibility of the resistance being due to a spasm of the compressor urethræ muscle which surrounds the canal at this point, arrest of the instrument occurring just as invariably after death as before.

Having in a number of cases carefully brought the bulb closely up to the point of resistance, an assistant held it in position while I exposed it by a dissection of the deep urethra. I always found the shoulder of the bulb in the exact locality of the deep layer of the fascia, the edge of which could often be felt tense and cord-like over the upper wall of the urethra. A division on either side of its attachment to the ramus of the ischium or the pubes beneath the crura penis would then cause an immediate disappearance of the resistance, and the bulb could be drawn outward smoothly and uninterruptedly. If the handle of the instrument were depressed during its withdrawal, the edge of the prostate became a cause of obstruction; and it may act thus to a greater or less degree in all cases.

Avoiding these errors, then, and accepting the lower scale which I have given, the existence of strictures in the region under consideration may be determined in the usual way. As to treatment, internal urethrotomy is to be preferred when such a stricture is of long standing, distinctly fibrous in character or non-dilatable. Resiliency or resistance to dilatation is indeed the chief indication for a cutting operation on strictures at *any* portion of the urethral tract, and is far more important in determining the choice of treatment than their calibre, but internal urethrotomy in the pendulous urethra is particularly satisfactory on account of the comparative freedom from danger which has already been alluded to. As to the probability of effecting thereby a permanent cure, while, as I have already said, it is much greater here than elsewhere, such a cure can only be expected in a limited proportion of cases.[1] It is not in accord with other pathological observations to suppose that the mere division of a dense and old contractile band of fibrous tissue will result in its absorption, and my belief is that the majority of the true strictures of the spongy urethra which are cured by internal urethrotomy are those in which the division of the stricture is supplemented by the use for some time of full-sized bougies. The relief of tension afforded by the section of the stricture gives full play to the so-called "inflammatory atrophic dilatation," and in a certain proportion of cases either retrograde metamorphosis and absorption take place, or at least a thinning and weakening of the fibrous band, which results in its practical disappearance as a cause of

[1] Jacobson says: "But it must be remembered that after all it is not so much the division of the strictures, whether from without or within, which will be curative as the amount of perseverance which the patient shows afterward."

obstruction. I am compelled to believe, however, on both clinical and pathological grounds that the great majority of so-called strictures of the pendulous urethra which are cut by the extremists in urethrotomy are merely points of physiological narrowing, and that the so-called "cures" are merely illustrations of the fact that by a linear incision into its long axis we can put in the normal urethra a longitudinal splice of fairly healthy tissue which has but little tendency to contract afterward, and can thus more or less permanently enlarge the urethral calibre. This fact also explains the freedom from fatal results claimed by some surgeons who find strictures and do urethrotomies in the great majority of their cases of chronic urethral discharge. As there has been no real interference with the genito-urinary functions there has been no development of renal or vesical disease, and the urethra can be operated upon and the "splice" introduced with comparative impunity.[1] It is difficult to see, however, why such a splice should prevent the steady contraction of a mass of old cicatricial tissue, such as occupies the wall of the canal and the peri-urethral space in strictures of some standing.

Mr. Harrison, in his admirable Lettsomian lectures, has called attention to the damage that the urine is capable of exerting while the process of repair in a wound is going on. He adds:

"And what applies to the healing of wounds inflicted accidentally upon the urethra internally, applies equally to others similarly inflicted on the canal for surgical purposes. I have elsewhere stated that for many years past I have taken pains in collecting and noting cases of urethral stricture with the view of estimating the permanency or otherwise of the treatment to which the patient may have been previously submitted by various surgeons. The testimony that I have thus gathered from the examination of many hundred cases is certainly not favorable either to the permanency or the character of the relief that internal urethrotomy usually affords. Among the worst cases of stricture that I have thus met with have been those which have been treated by an internal section."

The proportion of cases in which true strictures of large calibre in the pendulous urethra require internal urethrotomy varies largely with the character of the patients among whom the surgeon practises. In hospital and dispensary service and among the poorer classes generally, strictures will quite frequently be found to have been neglected, and will almost always be of long standing before the patient presents himself for treatment, even if they are not of small calibre. They will, therefore, require urethrotomy in a much larger

[1] "Slight encroachments upon the urethral calibre when submitted to internal urethrotomy are not, as a rule, attended with the same inconveniences that follow the operation upon narrow strictures; but strictures of large calibre rarely require cutting unless indeed a superficial contracting band occasion sufficient reflex disturbances to require prompt relief. As to the ultimate results, thorough dilatation compares most favorably with urethrotomy."—Stein (*op. cit.*).

Agnew says (*Principles of Surgery*, p. 492): "However valuable may be incision, it must not be deemed a radical cure for stricture, notwithstanding what is said to the contrary by sanguine urethrotomists. The 'splice,' of which so much is said, and which occupies the gap between the sides of the divided parts, is granulation tissue; and the resulting cicatrix will always retain that invincible power of contraction. The tendency to coarctation in the canal is, it is true, lessened, but it is not destroyed; and hence the patient must be instructed to pass a metal sound once or twice every month if he expects to keep out of the hands of the surgeon at some future time."

percentage of cases than will be found among private patients of good social position. Among the latter perhaps not more than one in eight or ten in my own practice need such operative measures, gradual dilatation, as above described, amply sufficing in the remainder to cause the disappearance of all symptoms and often of the stricture itself, when it is of recent formation.[1] Indeed, even in older cases, as Keyes and others have observed, a notable amount of absorption of the indurated band constituting the stricture, can often be observed, and its diminution from day to day can be verified by the touch when the urethra is stretched over a full-sized sound. The exact time at which a urethral coarctation becomes of definite pathological importance is, as has been said, still unsettled; but that strictures of large calibre are occasionally the cause, not only of gleet, frequent micturition, dribbling and other urinary symptoms, but also of reflex pains and of impotence and other forms of sexual disorders, I firmly believe. I have on a number of occasions published cases in support of these views,[2] and in illustration of the beneficial effects produced by full dilatation in such instances. The general line of thought which underlies these views may be expressed as follows, certain physical and physiological laws being first taken into consideration.

Persistent irritation, such as results from frequent or protracted gonorrhœa, causes at any given point in the body an increase in the fibrous tissue of that region, and the deposit or development of new tissue of a similar character. This is especially true of mucous and submucous surfaces, and still more particularly of the urethra which, by its anatomical peculiarities, offers peculiar facilities for the production and organization of inflammatory products, and in which it seems probable that there occurs during a chronic urethritis a minute leakage of urine, which causes a slow formation of dense cicatricial tissue in the peri-urethral space. Such a deposit occurring in the submucous structures around the urethra interferes to a greater or less extent with the lumen of that canal, and thus constitutes a stricture. Once deposited, here as well as elsewhere throughout the body, this new tissue tends to contract more or less steadily and continuously. This is in consonance with a well-known pathological law, and the contraction is no more noticeable here than when it occurs in the intertubular spaces in interstitial nephritis, strangulates and destroys the parenchyma of the liver in cirrhosis, produces induration and bronchiectasis in chronic pneumonia, limits the movements of inflamed joints, distorts or deforms after burns and scalds, or in any of the many possible directions exerts its power in the production of disease. We have, then, it must be admitted, in urethritis a sufficient cause for the production of a condition which tends gradually to diminish the size of the urethra and to interfere with its dilatability.

In studying the effect of this condition in producing the symptoms that

[1] Watson (*op. cit.*) finds that the proportions in his operations would be one case of urethrotomy to ten treated by gradual dilatation.

[2] The Diagnosis of Urethral Stricture by Bulbous Bougies.—*The Medical Times*, May 26, 1877. International Encyclopædia of Surgery, Vol. II, pp. 353 *et seq.*

L'importance Chirurgicale des Rétrécissements de gros Calibre de l'Urèthre. Annales des Maladies des Organes Genito-Urinaires. Paris, Nov., 1888.

have been detailed, certain other physiological laws must be taken into account. For example, habit is a powerful agent in facilitating and controlling the functions of animal life. Illustrations of this fact in other systems than the genito-urinary are frequent and familiar. The evacuation of the bowels at certain hours of the day, and the difficulties resulting from inattention to their requirements, the easy and unnoticed digestion of food taken at proper intervals, and the anorexia and dyspepsia following irregularity in this respect, the imperceptible and uniform action of the heart under ordinary circumstances, its tumultuous and uneven palpitation when its work is suddenly increased; the many apparently trivial agencies which are notably sufficient to interfere with the mental processes when accustomed routine is broken into—all these are a few of unlimited examples that might be adduced to show the force of habit in influencing the mode of performance of such functions.

To take up the case in question, it is safe to say that in a healthy adult a certain equilibrium has been established and maintained between the usual efforts and powers of the bladder as an expulsive organ, and a certain average amount of resistance which must be overcome before it can empty itself. At the age of 21 years this adjustment of force depends upon a large number of previous distinct acts of micturition, about thirty thousand, if an average of four daily be taken. This balance between the force of expulsion and its work cannot with impunity be disturbed, and even a slight interference with the calibre of the urethra tends to produce such disturbance.

Apart from the proclivity to muscular spasm in the neighborhood of and behind every stricture, this interference with the action of the bladder arises from the encroachment of the new deposit upon the urethral calibre. It is a law of hydrostatics that if a current of liquid be passed along a tube, a certain degree of friction proportionate to the amount and velocity of the current and the size of the tube takes place between the walls of the latter and the liquid; if the tube be narrowed at any one place, the friction is increased at that point; and to avoid a diminution in velocity, the propulsive force behind the liquid must also be correspondingly increased. The pain excited by the very simple experiment of moderately compressing the urethra during micturition will serve to illustrate the bearing of this fact, as does also the exceedingly slight amount of prostatic enlargement which often suffices to bring on vesical troubles.

Still another point must be mentioned before recurring to the group of symptoms, justly referred, as a rule, to stricture of large calibre. The act of micturition is one requiring for its normal performance, first, the relaxation of certain muscles to secure potency of the urinary channel, and next the thorough and complete contraction of those muscles to produce entire evacuation of the contents of the passage, which would otherwise leave it *guttatim*. The latter portion of this act is accomplished by the contraction of the circular muscular fibres which surround the urethra, and which during the intervals of urination, in a healthy condition serve to bring and retain its walls in close apposition. The submucous deposit, which increases the friction of the stream of urine at any point, also interferes with the accurate closure of the canal by

those muscles whose action is impeded, and whose structure itself is in part often invaded, and, as a consequence, we have imperfect emptying of the urethra at the end of urination. Finally, if, in addition, we recall the intimate nervous connection of the urethra with all the viscera of the abdomen and pelvis, and with the walls of those cavities, and the mutual relation which exists between them, we are in a position to sum up the relation of the pathological and subjective phenomena as follows:

The increased friction and resistance resulting from even a slight fibrous peri-urethral deposit disturb the normal relations of the bladder, and, by rendering it irritable, bring on one of the common symptoms of stricture, frequent micturition. The imperfect closure of the tube, the muscular action of which at the point of deposit is materially interfered with, causes the equally imperfect expulsion of the last drops of urine, and produces another characteristic symptom, dribbling at the end of micturition; the retention and decomposition of these last drops, together with the abnormal friction between the stream of urine and the urethral walls, give rise to a subacute inflammation of the mucous membrane, accompanied with a catarrhal or muco-purulent discharge, constituting the condition of gleet; by reflex irritation transmitted from the area of inflammation, pains in remote organs and situations are developed, notably in the lumbar and hypogastric regions.

This relation of causes and effects has been in the main accepted as correct by the profession for many years. Probably no one denies that in certain strictures in which the urethral calibre is markedly diminished the connection between the pathological changes and the observed indications is about as has been stated. The differences of opinion which now exist are chiefly as to the *amount* of urethral contraction which is sufficient to produce noticeable effects, and here the evidence must rest upon clinical observation supported by the results of autopsies.[1]

(3) *Strictures of the meatus and of the neighborhood of the fossa navicularis.*

In this region dilatation is peculiarly unsatisfactory. Owing to the intimate relation between the spongy tissue of the glans and the urethra, to the exceptionally rich nerve supply to the part and to the extreme sensibility characteristic of muco-cutaneous outlets, the stretching of the stricture by means of sounds gives rise to pain, irritation and inflammation. For these reasons and on account of the absolute safety of the procedure, it is better to divide all such strictures rather than to attempt to dilate them. I have done so for many years, and have never had an alarming symptom. I desire, however, to record my protest against the most unnecessary and ill-judged zeal which, as Keyes

[1] Bryson, President of the American Association of Genito-Urinary Surgeons, believes "that urethræ narrowed in any part of their course may go for the longest time without giving their possessors anything to complain of in an inflammatory way, if only they remain free from specific infection. Instances of the truth of this assertion are to be found in cases of traumatic strictures and in those adults with congenitally narrowed meati, who, having contracted their first gonorrhœa, come before us, and from whom no history of former urethritis can be elicited, and who are not even aware of the fact that the almost totally occluded meati are otherwise than normal."—(*Jour. Cutaneous and Genito-Urin. Dis.*, April, 1889, p. 131.)

says, makes it of late years the rule rather than the exception for cases of obscure genito-urinary disease to present themselves with traumatic hypospadias, and with the history that their whole anterior urethra has been cut to a size among the thirties under the assurance that this would cure the malady. He adds: "This is the natural result of the modern fashion of meatomy and urethrotomy which has run riot in the profession and led to much unnecessary surgery and to some positive injury." I agree with him and with other competent observers who believe the cutting of true strictures in the anterior urethra to be good surgery, but who think that the division of every point at the meatus and in the first few inches, simply because those points are (as they should be normally) narrower than other points in the canal, is routine surgery of a very unprofitable sort.

The operation of meatomy is best done with a probe-pointed tenotome with the usual convex cutting edge. The incision should be made upon the floor of the urethra and should be sufficient entirely to remove all sense of resistance upon the withdrawal of a full-sized bulbous bougie. It should be a little larger than the calibre which it is desired to establish permanently, so as to allow for subsequent contraction. Like all other operations upon the urethra it should be done with scrupulous attention to antiseptic details. A short, straight conical bougie, the so-called meatus sound, should be gently inserted once in twenty-four hours during the healing process. Deeper troubles, unless urgent in their character, should be ignored until healing is complete. Sometimes, but much more rarely than is generally supposed, such troubles, although previously thought to be organic, will be found to have disappeared. In those cases they have probably been due to reflex irritation, but this condition never occurs except in conjunction with a pin-hole meatus or with a distinctly strictured condition of the urethra in its vicinity. I doubt greatly the production of deep urethral spasm as a result of the so-called anterior stricture of large calibre, either at the meatus or elsewhere. I am the more desirous of emphasizing this point, as I at one time strongly advocated the opposite view; but in the light of wider experience and longer observation of cases, I believe I did so upon insufficient grounds.

(4) *Strictures of small calibre (less than fifteen French), situated in advance of the bulbo-membranous junction.*

Strictures of this calibre in this region, unless seen very early and found to be unusually soft and dilatable, furnish the typical condition for internal urethrotomy, that in which it is attended with the minimum of danger and with the greatest prospect of effecting a permanent cure. The operation may be performed with the instrument which the surgeon happens to prefer, the essentials to success being a linear division in the roof of the urethra of every portion of strictured tissue, the incision extending from the normal parts behind to the normal parts in front of the stricture. If the contraction is of very small calibre a Maisonneuve urethrotome may be passed through it over a filiform guide and a preliminary urethrotomy done so that one of the various forms of dilating urethrotomes may be passed through it and the stricture freely divided from behind forward. A *bougie-à-boule* should then be used to demon-

strate the complete division of the stricture, a large size gum catheter passed and tied in the bladder, and bleeding controlled if necessary by the application of a firm bandage. The moderate risk attending this operation is reduced to its smallest proportion by the employment of sterilized instruments, the use of urethral irrigation before, and, if necessary, after the operation, the administration of internal remedies, which tend to sterilize the urine, and by attention to the various details of antisepsis as applied to genito-urinary surgery.

A few days after the operation a full-sized bougie should be gently passed, and should be used afterward, as in cases of dilatation, for some weeks. Often it will be necessary to use it at intervals for a much longer period, and in a fair proportion of cases an apparent cure follows.

(5) *Strictures of small calibre (less than fifteen French), situated at or deeper than the bulbo-membranous junction.*

The diagnosis of these strictures, which are surgically most important, can be made either by means of a bulbous bougie, if it is possible to pass one through them; or by introducing a sterilized sound, well warmed and oiled, down to the anterior face of the contraction. They will usually be accompanied by gleet and marked vesical symptoms, increasing in severity with the tightness of the stricture. The choice of treatment lies between dilatation and some form of urethrotomy. Divulsion is so clumsy, so uncertain and so dangerous as to have to-day almost no advocates, and to enter into an argument against it is, therefore, in my opinion, a waste of time. I have never believed in it even when, many years ago, it was the favorite method among my seniors at the Philadelphia Hospital, and I have still less confidence in it now.

In beginning the treatment of such a stricture as we are considering, I prefer to attempt first, with great gentleness, to pass through it a steel sound, provided its introduction requires no force whatever. Below No. 8 or 10 of the French scale I rarely go in the use of metal instruments, believing that in the most skilful and experienced hands there is a distinct and unavoidable danger of laceration of the inflamed and degenerated mucous membrane around the strictured region. If I succeed in passing a sound of whatever size through the stricture, I allow it to remain for from five to ten minutes, and then withdraw it. If it is the first experience with the patient it is best to avoid further instrumentation for from twenty-four to seventy-two hours, in the meantime administering five-grain doses of salol or boric acid four times daily, with a full dose of quinine night and morning. At the next sitting it is often well to recommence with the same instrument, after which one, two or three larger sizes may be used in succession, if their introduction is easy and is not accompanied by pain or followed by bleeding. Pain and hemorrhage are unmistakable indications for lengthening the intervals and for proceeding with greater slowness in the use of larger instruments.

Once fairly established, however, the treatment by dilatation is carried on as described above, the full normal calibre being usually reached in two or three weeks. If the stricture is not resilient or irritable, or traumatic in its origin, it will be found that all symptoms have disappeared unless, perhaps, the gleet persists for a time, but this, too, will finally subside. If the stricture

were a recent one it also may undergo absorption, but in any event the occasional introduction by the patient of a steel sound will always keep the case under control.

In the case of resilient, irritable or traumatic stricture in this region, or of stricture which for any reason, as the occurrence of rigors, is non-dilatable, external perineal urethrotomy is the operation of choice.

(6) *Strictures of the deep urethra permeable only to filiform bougies.*

In certain cases no steel sound and no ordinary soft instrument can be made to pass the stricture, but a persevering trial with filiform bougies made of whalebone will result in the passage of one into the bladder. This trial should be made persistently and patiently and in the absence of retention of urine may be repeated on successive occasions. At the first sitting, a filiform having been passed down to the stricture, but refusing to enter it, it should be withdrawn and an angle of 45° put into it by bending it across the thumb-nail from one-quarter to one-third of an inch from the end. The orifice of a tight stricture is frequently not in the middle of the obstructed urethra, but is to be found at some point around its circumference, and this little manœuvre will often enable the surgeon to enter it when with a perfectly straight filiform he cannot do so. If this does not succeed, several filiforms should be passed by the side of the first one so as to impinge upon the irregular anterior face of the stricture at a number of points. By attempting to pass first one and then another of these, the instrument bearing the right relation to the orifice will often be found and passed into the bladder. If this fails or if one filiform can merely be engaged in the stricture, but cannot be made to pass through it, it is good surgery and safe surgery, in the absence of retention, to tie it in place and allow it to remain *in situ* for twenty-four hours. In the great majority of cases at the end of that time it can be passed with comparative ease into the bladder. There is no objection to still longer delay or, as I have said, to repeated trials if no urgent symptoms be present.

After the first instrument is introduced in such a case, four courses are open to the surgeon : (1) He may allow it to remain in place with the certainty that in one or two days others may be slipped alongside of it and may be used as guides for the introduction, first, of a tunnelled catheter, and later of the ordinary soft or steel bougies ; (2) He may attempt to conduct a tunnelled catheter over it into the bladder at once, to be followed by gradual dilatation ; (3) He may conduct over it a tunnelled and grooved staff, and then proceed to the performance of external perineal urethrotomy ; (4) He may use it as a guide for a Maisonneuve urethrotome, and may immediately perform internal urethrotomy.

I have mentioned these procedures in the order of preference and of safety. If the stricture which is being dealt with is not of traumatic origin and is not known to be specially resilient or irritable, the first method will lead up to the adoption of gradual dilatation with the greatest degree of comfort and absence of anxiety to both patient and surgeon. Even if there has been moderate retention it is absolutely certain that the urine will pass with increasing freedom by the side of the filiform, and that the danger of the case so far as reten-

tion is concerned is at an end. If retention has been complete for a long time and is threatening, and the need for immediate relief is marked, it is well to adopt the second method and endeavor to catheterize at once. Failing in this, the third procedure should be employed in all cases of urgency and in all cases of traumatic, resilient or irritable stricture, as well as in cases in which there is a history of frequent rigors after instrumentation. The operation is simple, is easily performed, and has a very small mortality. If the median line of the perineum be rigidly followed, hemorrhage is insignificant, and in no event is likely to be dangerous. The stricture is freely divided, and, although not frequently cured, may be left as in a successful dilatation entirely under the control of the patient and the surgeon, the urethra having been restored to its full calibre.[1]

The fourth procedure should, in my judgment, be employed only in those cases in which the patient refuses to have the external operation performed. It is attended in the best hands with a distinctly larger mortality than any of the other methods mentioned, and there is to my mind no reliable evidence that it is followed by any larger percentage of real and permanent cures.

(7) *Impassable strictures of the deep urethra.*

If the methods of procedure which I have described are adopted, very few strictures will fall into this class; but occasionally, in spite of the most persistent efforts, no instrument can be made to enter the bladder. Occasionally the distended and chronically inflamed urethra behind such strictures will have given away and permitted the leakage of a greater or less quantity of the urine into the surrounding structures. In either of these events the operation of perineal section becomes imperatively necessary. There has always been more or less confusion in the nomenclature of the perineal operation for the relief of strictures. The old *boutonnière* operation of Desault (of which the so-called "Cock's operation" is a modification) had for its object the establishment of an opening from the perineum into the bladder, was usually effected by opening the urethra behind the obstruction, was purely palliative, and if it ever resulted in a cure, did it by accident, as the procedure itself did not include of necessity any division or enlargement of the strictured portion of the canal. It was an "external urethrotomy," to be sure, but it was not related either in its purpose or its method to the other operations known by that name. Since

[1] Keyes says, in reference to the cure of these cases: "I have approached this question by giving some personal cases, in which permanent cure seemed to have followed the thorough division of stricture by perineal section, while acknowledging the failure of accomplishment of radical cure in a vast majority of the cases operated on. In seeking for an explanation of the difference, I found that there are different forms of organic stricture—the soft, the innodular and the purely cicatricial fibrous stricture, with no innodular masses. My conclusion is that the soft stricture, in which there is no fibrous organic change below the surface of the mucous membrane, but probably considerable spasmodic element, may be radically cured by dilatation or section; pure fibrous tissue only by thorough section, and subsequent use of large instruments for a considerable time, after which, I believe instruments may be given up; innodular stricture, not at all radically, except, perhaps, after treatment by excision. I prove by two cases a possible increase in calibre of the cut strictured area after section during development of the genitals (pubescence) beyond the size of the dilating sound used to maintain the cure."

Syme reviewed and popularized the operation of external urethrotomy—the division of a stricture upon a grooved staff passed through it into the bladder—more system has been introduced into the terms employed, but there is still much objectionable looseness. . Hunter, Grainger, C. Bell and others had before Syme's time formulated the operation known as "perineal section," which was also an external urethrotomy, but which was then restricted to those cases in which no instrument whatever could be made to pass the stricture. The term should still be reserved for such cases, and on account of its brevity is, perhaps, preferable to its synonym, "external perineal urethrotomy without a guide."

As to the symptoms of extravasation, which indicate the immediate performance of this operation, the urethra may be divided into four regions. In all that part from the meatus to the scrotal curve, extravasation is accompanied by a swelling of the penis, greatest in the immediate neighborhood of the point of escape. In the region included between the attachment of the scrotum and the anterior part of the bulb, the course of extravasated urine is governed by the attachments of the deep layer of the superficial fascia, or the fascia of Colles. Extravasation of urine occurring through a solution of continuity in the bulbous region of the urethra will first follow the space inclosed by this fascia in front and below, and by the anterior layer of the triangular ligament posteriorly, and, as it cannot reach the ischio-rectal space on account of the attachment of fascia to the base of the ligament, and cannot reach the thighs on account of the insertion of the fascia into the ischio-pubic line, it is directed into the scrotal tissues, and thence up between the pubic spine and symphysis until it reaches the abdomen.

If, escaping from the membranous urethra, the extravasated urine would be confined to the region included between the layers of the triangular ligament, and would only gain access to other parts after suppuration and sloughing had given it an outlet, the consecutive symptoms would then depend upon the portion of the aponeurotic wall which first gave way. If the opening is situated behind the posterior layer of the triangular ligament, *i. e.*, in the prostatic urethra, the urine may either follow the course of the rectum, making its appearance in the anal perineum, or, as it is separated from the pelvis only by the thin pelvic fascia, it may make its way through the latter near the pubo-prostatic ligament, where it is especially weak, and may spread rapidly through the sub-peritoneal connective tissue.

In the presence of retention or extravasation of urine in a case of stricture in which catheterization is impossible there can be no doubt as to the proper procedure. Immediate perineal section is so evidently the only operation which meets all the indications that no other can be seriously considered. The steps of the procedure are obvious and beyond dispute, except as to a few points which I may mention.

In all cases in which perineal section is performed for stricture, impassable, but without other complications, the method of Mr. Wheelhouse, of Leeds, seems to me to meet every indication. The passage of the staff to the stricture shows the exact site of the latter; the insertion of the threads into the divided

urethra serves not only to hold it open and give an opportunity for the discovery of the proximal portion but also fixes the anterior end, and renders it easily recognizable during the operation. The least useful direction which Mr. Wheelhouse gives is that of turning the staff with the concavity of the curve upward so as to hook it into the upper portion of the urethral wound. The instrument is sometimes in the way, has to be held by an assistant, and, it seems to me, does not afford much help during the operation.

If persevering search fails to reveal the proximal end of the urethra in cases of traumatic stricture with practical obliteration of the canal, are supra-pubic cystotomy and retrograde catheterization justifiable? I am inclined to answer this affirmatively, though such failure should be most exceptional. If the bladder contains urine, and particularly if it is distended, pressure on the hypogastrium or bimanual pressure with the fingers of one hand on the abdomen and of the other in the rectum, will often cause a jet of urine to issue from the proximal end and will at once disclose its situation. Hæmostasis in the whole wound by very hot water will sometimes reveal the urethra by emphasizing the difference between its color and the surrounding parts, the urethra generally showing much paler. The relation to the pubes and to the lower edge of the triangular ligament should be most carefully borne in mind, the search for the torn end in ruptures or for the portion behind the stricture in those cases being frequently carried too near the pubes. The membranous urethra in the adult usually runs through the ligament about one inch below the symphysis and about three-quarters of an inch above the perineal centre. All guides, however, fail occasionally in certain of these cases, and it is then that supra-pubic cystotomy is warranted, as an operation with so small a mortality that the slight additional risk is far outweighed by the advantages to the patient of having even an imperfect restoration of the urethral canal.[1]

Much difference of opinion exists as to the value of a retained catheter after perineal operations opening into the urinary tract. Many authorities advise that in cases of section for stricture no instrument be employed, or that, at the most, a short perineal drainage tube be used. Others direct that it be kept in for 48 hours and then withdrawn. I believe, basing my opinion on a fairly extensive trial of both methods, that the retained catheter is of great value in all operations connecting the bladder with the surface of the body, not excepting certain cases of lithotomy with purulent cystitis. If Spence's caution is observed, and it is not allowed to project far into the bladder, and if it is kept clean and sweet by regular antiseptic injections, it is of the utmost advantage in aiding in the prevention of urethral fever as has been shown by Keyes, Harrison, Diday, Shield, Davies, Hill and many others. Of equal im-

[1] Retrograde catheterization was practised for the first time in 1757, by Verguin, a surgeon of Toulouse, who passed a catheter into the urethra through a pre-existent fistula of the bladder, consecutive to supra-pubic puncture, since which time a number of surgeons have had recourse to this procedure; and Sédillot formally expressed his opinion, "That in the absence of a pre-existent fistula, if, in the course of an external urethrotomy (perineal section) undertaken for an impassable stricture, it were found impossible to discover the posterior end, the surgeon would be justified in doing a supra-pubic cystotomy at once, in order to practise retrograde catheterization."

portance, in my opinion, is regular catheterization at short intervals, begun after the removal of the catheter first introduced. I have repeatedly seen a decided febrile movement after urethral operations disappear or reappear in accord with the employment or the neglect of the catheter. The traumatic urethritis, which the retained catheter or the frequent use of the instrument is said to give rise to, has almost disappeared from my practice since I have begun the use of antiseptic irrigation in such cases, and particularly since I have paid especial attention to the sterilization of the urine by the internal administration of antiseptics. The sterilization of urine by boric acid, or by salol, is of great importance in the after-treatment of all these cases and should never be omitted. These remedies are more effective, in my judgment, if combined with full doses of quinine, but either of them is far more useful than quinine alone. They should be given with more freedom and more regularity in urethral and vesical operations.

My conclusions as to the treatment of organic strictures of the urethra may be summed up as follows:

1. Strictures of large calibre, that is, of more than 15 French, situated at or behind the bulbo-membranous urethra, are to be treated, almost without exception, by gradual dilatation.

2. Strictures of large calibre occupying the pendulous urethra are to be treated by gradual dilatation when very recent and soft, and by internal urethrotomy when of longer standing, distinctly fibrous in character or non-dilatable. It is to be remembered that the great majority of so-called strictures of large calibre of the pendulous urethra are merely points of physiological narrowing.

3. Strictures of the meatus and of the neighborhood of the fossa navicularis should be divided upon the floor of the urethra whenever it is evident that they are real pathological conditions producing definite symptoms and not normal points of narrowing.

4. Strictures of small calibre (less than 15 French), situated in advance of the bulbo-membranous junction, unless seen very early and found to be unusually soft and dilatable, furnish the typical condition for internal urethrotomy, which should be done preferably with a dilating urethrotome and, invariably, with all possible antiseptic precautions.

5. Strictures of small calibre (less than 15 French), situated at, or deeper than, the bulbo-membranous junction, should be treated whenever possible by gradual dilatation. In a case of resilient, irritable or traumatic stricture in this region, or of stricture which, for any reason (as the occurrence of rigors), is non-dilatable, external perineal urethrotomy is the operation of choice.

6. Strictures of the deep urethra, permeable only to filiform bougies, should be treated by gradual dilatation when possible, the filiform being left *in situ* for some time, and followed by the introduction of others, or used as a guide for a tunnelled catheter. If the stricture be not suitable for dilatation, external perineal urethrotomy should be performed.

7. Impassable strictures of the deep urethra always require the performance of perineal section.

RENAL TORPIDITY.

By H. A. Hare, M.D.,

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Although the medical profession and the laity have been accustomed to ascribe many disagreeable symptoms to what has been called "torpidity of the liver" or "biliousness," very few persons have considered as of much importance, or have recognized in any way whatever, a corresponding functional inactivity of the kidneys. This condition of renal atony has proved to be, in a number of cases which the writer has seen, productive of much distress and minor ill-health. If we admit that the kidneys do become temporarily inactive at any time, then their importance as excretory organs at once shows that such a condition must be followed by the retention of effete materials and the development of symptoms of a more or less active character. We are all on the *qui vive* for cardiac disorders from indigestion, or for headache and languor due to hepatic troubles, but if none of these are found to exist we are often at a loss to determine the cause of the ailment.

For a number of months the writer has been much interested in the study of several cases in which the kidneys seemed to be rendered inactive or deranged by disorders of the digestive functions or in which the digestive functions seemed impaired by primary renal torpidity. In some instances this torpidity consisted not in an inability on the part of the kidneys to carry on ordinary effort, but in a slowness of action when calls beyond their regular duties were laid upon them.

The following instance illustrates those cases in which the digestive disorder seemed to cause not only inactivity of secretion, but, in addition, albuminuria:

C. H., æt. 3 years, female, appears to be perfectly healthy and is unusually well nourished. Is not fretful during the day or restless at night and has a good appetite. Six months ago, while ailing slightly, the parents noticed that the urine was very concentrated and of a very dark color, and sent some of the liquid to a physician to be tested. Examination showed it to be heavily loaded with albumen; a diagnosis of acute or subacute nephritis was made, and proper dietary and medicinal measures resorted to. The amount of albumen in the urine after this attack steadily decreased, and finally, when the case came under my care, the albuminuria was absent and did not appear until some weeks later, when an attack of gastro-intestinal catarrh of a mild type came on, preceded by a few days of constipation, which soon merged into a mucous diarrhœa, the passages being very fetid and containing undigested food. Before the child had diarrhœa, and while the constipation existed, the urine became concentrated and loaded with albumen. All attempts to check the diarrhœa failed so far as permanent cure was concerned, until by the use of alkaline diuretics the urine became clear and almost free from albumen, when the diarrhœa also ceased spontaneously. The urine now became normal and remained so until through slight indiscretions in diet the same symptoms returned on several other occasions.

This case indicates that the kidneys may be, as already stated, capable of doing ordinary work, but fail, if by disturbances in the system they are required

to eliminate any irritating products formed by decomposing food in the alimentary tract.

The next case typifies another form in which the renal torpidity causes a series of unpleasant symptoms, followed by marked disturbances of digestion.

P. H., æt. 29, a male, apparently in perfect health, though much confined to his desk, and without anything of note in his history as to disease, either in infancy or adult life, suffers from frequent attacks of headache and indigestion. The headache follows a feeling of languor and irritability, which sometimes lasts several days. On the day on which the attack culminates he notices, about 10 o'clock in the morning, a feeling of great sleepiness, while slowness of thought becomes so marked as to render conversation difficult or actually inaccurate, so far as correct answers to questions are concerned. Sometimes amnesic aphasia is present to a very slight extent. These symptoms are rapidly followed by very severe headache, cold feet, more or less nausea, but no vomiting unless this is provoked by tickling the fauces. If vomiting is produced, butyric acid sometimes is present in large amounts.

During this time there is apparently no secretion of urine, but after three or four hours a sensation of fulness about the neck of the bladder comes on, which is partly relieved by the passage of a few drops of concentrated urine, which does not scald the urethra. Soon after this urinary secretion becomes profuse, the headache ceases, and the urine when passed is limpid and of a very low specific gravity but scalds the urethra very severely. *These attacks come on irrespective of diet or of manner of living, and are always preceded for several days by the secretion of a concentrated urine of decided odor.* Further than this they can always be prevented, if the patient drinks large amounts of Vichy or other diuretic waters as soon as he notices an increased specific gravity of the urine.

This case indicates that we may have renal torpidity which, if overcome by renal stimulants, prevents a train of symptoms which we would commonly call "biliousness," but which calomel will not relieve.

The writer is well aware that he has dealt with symptoms more than diseases, but a certain number of such cases has taught him that a close connection exists between the kidneys and alimentary canal, and that obscure headaches, loss of appetite, and general *malaise* may often be relieved by alkaline diuretics, such as citrate of potassium or other similar drugs, when tonics, laxatives and mercurials have been used without result. Pepper and DaCosta have both of them mentioned in their lectures or writings, a condition which they have called "renal inadequacy." In such states, however, there is a constant secretion of very small amounts of urine in lieu of the quantity normally passed by a healthy man. Renal torpidity is therefore a different condition.

MEMORANDA.

PHYSIOLOGICAL ACTION OF ATROPINE.

DR. REICHERT'S paper in the February number of the MAGAZINE has not only a freshness about it which makes it interesting, but also an apparent antagonism to older views, which leads me to make some comments lest clinicians should think physiological therapeutics a mere searching for a will-o'-the-wisp. It is a fact, however, that the physiological portion of the essay is, in most important matters, not discordant with previous conclusions. The clinical portion, coming from the pen of the pure physiologist, carries less weight; and many years of study of the records of cases and much personal observation leads me to disbelieve the correctness of some of Dr. Reichert's conclusions concerning the effects of atropine in human opium poisoning and concerning the symptoms of atropine poisoning.

It is certainly true that atropine does not always increase respiration in opium poisoning; but the general professional belief that when it does do good it increases the frequency of the respiration, is, according to my reading, in accord with the clinical facts and the clinical records; also, I still believe that ordinarily in atropine poisoning the respiration is hurried.

Leaving, however, this clinical matter as comparatively unimportant, we come to the physiological portion of the paper, that portion which bears the great weight of Dr. Reichert's physiological reputation. The important conclusion is reached in the language of the author: "Thus, clinical, experimental and toxicological data demonstrate clearly that atropine cannot be considered a reliable respiratory stimulant:" on the opposite page, however, facing this sentence, is the positive (and, as I believe, correct) statement: "The fact that the rate is always increased after section of the pneumogastric nerve is *conclusive proof that the drug stimulates the respiratory centres.*" [Italics are mine.]

I do not propose to enter into any further discussion of this matter, but think that it ought to be understood that, so far as respiration is concerned, the physiological conclusions of Dr. Reichert are, that atropine stimulates the respiratory centres, but paralyzes the peripheral ends of the pneumogastric nerve. Any reader who will take the trouble to look on page 214 of the seventh edition of my "Therapeutics," will find it there stated that "Atropine causes a direct stimulation of the respiratory centres;" and also, "a paralysis of that portion of the pneumogastric nerve which is connected with the function of respiration." There may be difference of opinion between us as to the exact clinical value of atropine as a respiratory stimulant, but as physiologists we are in accord.

In accordance with Dr. Reichert's opinion is the fact that the recent

growth of our knowledge indicates that atropine will have to be dethroned from the first place which it has held amongst practical respiratory stimulants. Ammonia, it is true, is too fugacious and too locally irritant to be of first rank at the bedside. Cocaine at this moment seems to bid fair to be of service, but its exact usefulness is not yet determined. The great value of strychnine was, however, demonstrated upon anæsthetized animals by myself last summer, and since then I have proved its power in animals narcotized with chloral or morphine; whilst the remarkable case of opium poisoning published in this MAGAZINE by Dr. Clara Dercum must be fresh in the minds of readers.

The second portion of Dr. Reichert's article does not seem to need discussion here, dealing as it does with purely physiological points, and, after all, except in regard to the accelerator nerves, not differing essentially in its important conclusions from the older opinions. Dr. Reichert certainly shows that the theory that the accelerator nerves are acted upon by atropine is unproved, and is at present unnecessary, because the physiological facts upon which it has been based are best explained as being the result of the direct stimulating action of the drug upon the heart. The theory of the stimulation of the accelerator nerves originated before it was believed that small doses of atropine stimulate the heart directly.

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TREATMENT OF FISSURED NIPPLE AND ENGORGED MAMMARY GLAND.

IN the treatment of fissured nipple, when the cracks are at all extensive, the ordinary remedies recommended from time to time have been found more or less unsatisfactory. Painting with tincture of benzoin, for instance, while an excellent procedure for small superficial cracks of the nipple, is perfectly worthless in more advanced cases.

The writer has found in hospital and private practice that excellent results can be secured in bad cases by the application of an ointment made up of equal parts of castor oil and subnitrate of bismuth. This mixture makes a very smooth, soft ointment, which relieves the pain, and is an excellent protective to the part. Before application, the nipple and surrounding skin should be carefully cleansed and disinfected, and then the ointment should be smeared on plentifully. If it is necessary for the child to nurse from the affected nipple, it can be allowed to do so without the necessity of removing the ointment from the nipple, as must be done if tannic acid or the salts of lead are used. This is a serious disadvantage of many forms of treatment recommended for fissured nipple, for the irritation of removing the substance employed as a local sedative neutralizes its action.

For the engorgement and pain in the mammary gland itself, which so often

accompanies fissured nipple, the writer has had excellent results from the use of an application of lead water and laudanum, which is applied by means of a cloth covering the whole breast, renewed at frequent intervals, and kept in place by a suitable mammary binder, either that recommended by Richardson or the Murphy bandage. This not only retains the dressing, but supports the breast and exercises even pressure upon it. With this treatment the development of mammary abscess is a rare event. If the child can be nursed from the other breast alone it is safer, I think, to draw the milk from the affected gland by means of a breast-pump until the cure is almost complete. If it is necessary that the child should nurse from the cracked nipple, a glass nipple shield with a rubber tip must be employed.

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A CASE OF DOUBLE SCIATICA OF MALARIAL ORIGIN.

On November 17th, 1889, the writer was called to see a machinist, aged 47 years. The patient was found lying in bed, screaming from the intolerable anguish caused by pains shooting down the backs of both legs and into the feet. This pain he described "as like that which would be caused by pouring melted iron down the legs."

He had been suffering from similar attacks, although of milder character, on alternate days for a week past, and mentioned that they always commenced with a chill, followed by fever and sweating. The attack would last several hours and then pass off, leaving a feeling of soreness in the affected part. Malaria, of course, was at once thought of, and the opinion was confirmed when I was told that the patient had lately returned from the coast of South America, where he had several attacks of "ague." The pain was paroxysmal; the patient would have a brief interval of comparative quiet, then he would suddenly cry out, and the flexor muscles of the leg would contract spasmodically. In a few seconds he would be quiet again. The slightest movement of either leg would bring on another paroxysm of pain.

There was marked hyperæsthesia, besides which painful points were especially marked at the sacro-iliac junctures, in the popliteal spaces and back of the external and internal malleoli. The patient was also suffering from violent headache, the temperature was 104.3°, and the spleen was enlarged. There was no history of syphilis, rheumatism or any other special cause for the sciatica.

He was ordered sulphate of quinine, gr. xxv, to be taken in divided doses during the night, and sulphate of morphine, gr. ¼. The next day he was entirely free from pain, and his temperature was normal.

The quinine was kept up in smaller doses during the day, and gr. xx were ordered to be given on the following day about two hours before the paroxysm had usually occurred, with the result that he escaped the usual attack. Quinine, gr. v t. d., and a mixture of arsenic and iron were taken for several months, after which he stopped the medicine.

In May last, he had another attack which yielded to similar treatment, since which time he has enjoyed fair health.

This case presents two unusual features. First, both sciatic nerves were simultaneously affected, which, while it occasionally occurs, is far from common. Secondly, while malarial poisoning is a well-known cause of neuralgia of the trigeminal and intercostal nerves, most authors give it no place as a cause

for sciatica ; indeed, Erb[1] says, "All authors consider it doubtful whether it can be induced by malarial infection, as a typical example of sciatica is extremely rare in periodic fevers."

On the other hand, however, Putzel[2] says that the sciatic nerve is, next to the trigeminus, most frequently attacked. In spite of this assertion, while no doubt similar cases have occurred, I have been unable to find any report of one.

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FRACTURE OF THE BODY OF THE SCAPULA, THROUGH MUSCULAR VIOLENCE.[3]

An interesting case of fracture of the body of the scapula, through muscular violence, was admitted to the receiving ward of the Pennsylvania Hospital, with the following history :

C. F., æt. 33, fell from the deck of a coasting vessel to the bottom of the hold, a distance of between twenty and twenty-five feet. In his descent he grasped a rope hanging near by with sufficient strength to steady himself, but almost instantly experienced a sharp, stinging pain in the shoulder, which compelled him to relinquish his grasp, when he fell to the bottom, striking upon his buttocks. On admission to the hospital he complained of some pain in his thighs, and desired to return home. While examining the back, pressure over the right scapula caused him to flinch. On making a more thorough examination of this region, by grasping the spine of the scapula above and the inferior angle below, and gently moving the bone in opposite directions, crepitus was felt and could be heard by those standing near his bed. There was no evidence of contusion, and he assures me he did not strike his shoulder at any time during the fall. There was a little deformity, caused by the lower fragment having been drawn upward and inward and overlapping somewhat the upper fragment. There was no swelling, though manipulation caused some pain.

The treatment consisted in placing his arm to the side, holding it in position by adhesive plaster, and retaining a compress over the body of the scapula by means of a firm roller; the forearm was placed across the chest, and the third roller of Desault was applied.

The first dressing was removed two weeks after the injury occurred. The fragments had united firmly and in good position.

Fractures of the scapula are placed among the rare accidents in surgery. Of over 4,600 fractures treated in this hospital, from May 1, 1884, to the present time, December 1, 1890, but seventeen were fractures of the scapula, or less than .37 per cent. Of these seventeen, the records show but two (2) fractures of the body of the scapula, less than .05 per cent. ; both were due to direct violence.

The above case is of especial interest, as having been caused through muscular action ; the body of the bone being the seat of fracture, the diagnosis

[1] Ziemssen's Encyclopædia, Vol. XI, 171.
[2] Functional Nervous Diseases, p. 102.
[3] Read before the Philadelphia County Medical Society.

was clear. The literature of the subject presents but four cases of this fracture due to muscular action.

Callaway is quoted by Packard[1] as reporting a case observed by Dr. Heylen. A man, æt. 49, hung to a cart and was drawn along some 100 yards. The diagnosis was clear.

Morris[2] reports a case of an engineer, who fell forward against a lever and felt something snap. Upon examination, a fracture through the spine was diagnosed.

Dobson[3] reports the case of a young artilleryman, who, in attempting to move a heavy iron target, felt a snap in his shoulder, which, upon examination, proved to be a fracture through the body of the bone. Crepitus was detected in this case by the stethoscope.

Gurlt[4] quotes from Michon a case in which a child, getting up off the ground, fractured the scapula through muscular action.

The writer wishes to express his thanks to Dr. Morton for permission to place this case upon record.

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[1] International Encyclopædia of Surgery, Vol. IV., p. 114.
[2] Ibid., Vol. IV, p. 114.
[3] Lancet, Nov. 27, 1886, p. 114.
[4] Cyclopædia of Diseases of Children, Vol. III, p. 1062.

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EDITORIAL.

THE USE OF THE CHEMICAL PRODUCTS OF THE DIPHTHERIA BACILLUS AND OTHER DEFINITE CHEMICAL COMPOUNDS IN THE PRODUCTION OF IMMUNITY FROM DIPHTHERIA.

WHILE the medical world is still deeply interested in the progress and ultimate success of Koch's method of treating tuberculosis, investigators have turned their attention to the production of immunity from diphtheria in small animals. Three different articles on this subject have appeared almost simultaneously—one by Behring (*Deutsch. med. Wochenschr.*, No. 50, 1890), from Dr. Koch's laboratory; another by Brieger and Fraenkel (*Berlin. klin. Wochenschr.*, No. 49), and the third in our own country by Gray and Schweinitz, of Washington (*Medical News*, Jan. 3d, 1891).

All of these workers report success in their experiments, viz., the production of immunity from diphtheria in guinea pigs.

Behring describes four different methods as follows:

1. Iodine trichloride, in the proportion of 1 to 500, was added to a four weeks' culture of the diphtheria bacillus and the mixture allowed to stand sixteen hours. Guinea pigs were then treated by subcutaneous injections of the

solution, and thus rendered insusceptible to the disease by direct inoculation with the germ.

2. In making *post mortems* of animals dead from diphtheria, a small quantity of an amber-colored substance is often found in the pleural cavity. This exudate does not contain the germ, and can be traced and shown to be a product of the germ, probably albuminoid in character. The substance is very poisonous, but if small quantities are injected into guinea pigs several times, the animals are rendered insusceptible to diphtheria.

3. After trying a number of compounds of antiseptic properties to check the disease after animals had been inoculated with the germ, Behring found iodine trichloride to be most effective. By injection of a dilute solution of this substance, diphtheria in guinea pigs could be checked in a few hours.

4. Hydrogen peroxide was found to be an excellent material for immunising animals, though its use in treating the disease was not satisfactory.

With the exception of the pleural exudate, these compounds have all been used before in treating diphtheria, but Behring distinctly states that he has not yet found a substance which is satisfactory for diphtheria in man. Brieger and Fraenkel, Gray and Schweinitz have been working in exactly the same line with the chemical products contained in or isolated from the sterilized culture liquids of the germ.

In December, 1888, Roux and Yersin (*Annales de L'Institut Pasteur*, No. 12, p. 629–661) began an exhaustive study of the diphtheria bacillus as described by Klebs and Löffler. In the course of their experiments they found that they could produce paralysis and death in animals by treating them with sterilized cultures of the diphtheria bacillus. In a later paper (*Ibid*, June, 1889) these authors conclude that the poisonous principle in the solutions is a ferment, and not an alkaloid, as they at first supposed. In general, they say death is caused by the fact that the poison is produced on the mucous membrane and then circulated through the system. Now, from artificial cultures of the Klebs-Löffler bacillus, Brieger and Fraenkel, and from artificial cultures of Klein's bacillus (probably identical with the Klebs-Löffler), Gray and Schweinitz have isolated albumoses, which are regarded as the active poisons formed by the germs.

By treating guinea pigs with the albumose and then inoculating them with the germ, the first two investigators appear to have been unsuccessful, the other two fairly successful. With sterilized cultures both sets of experimenters have produced immunity in guinea pigs. Brieger and Fraenkel succeeded best with cultures which had been heated to 65°–70° C. Gray and Schweinitz do not state how their cultures were sterilized—probably with a Pasteur filter.

Whether the chemical substances formed by the growth of the germ will also be effective in checking diphtheria in man is a point not yet decided. In the case of a disease, the course of which is so short, there is less to expect in the way of success than in diseases where there is time enough for the immunising substances to produce their effect. But in the present stage of science no reasonable theory should be condemned until practically disproved.

The problem, at any rate, is one which the American investigators are endeavoring to solve, and, it is to be hoped, with prospects for success.

BOOK NOTICES.

ESSENTIALS OF DISEASES OF CHILDREN. By WILLIAM M. POWELL, M.D. Philadelphia: W. B. Saunders, 1890.

Such a host of little books called "Compends" and "Essentials" are put upon the market that it can only be assumed that they are really called for and readily sold. Such being the case, we must recognize these as an "essential" part of medical literature of a new and rather startling kind, but one which has come to stay; and indeed, when one looks over some of these, he is struck with the value which they can bear to the undergraduate by reason of their conciseness and accuracy. Even the so-called busy practitioner, who ought to read a lot and yet who does not do more than glance over the current journals, would have his knowledge on special lines very admirably furbished up and set in order by himself giving these a pretty careful skimming. We have before us two books on "Essentials of Diseases of Children," one by Dr. Powell, of Philadelphia, and one by Dr. Hatfield, of Chicago.

Dr. Powell's book is arranged in the form of questions and answers. It begins with a very good chapter on how to examine children. Touching upon the most salient points, it moves on to the general consideration of fecal evacuations, vomiting, the pulse, temperature, etc., and then takes up the disorders of dentition, diseases of the mouth and throat, stomach and intestines, the liver, peritoneum and other organs. The questions are very well chosen, the answers sensible and clear. The subjects most dwelt upon throughout the book are symptomatology and treatment. Pathology receives very little attention, but diagnosis is very wholesomely considered. The book contains numerous suggestions as to treatment in detail, although we must protest against the phrase, now and again seen, that this drug "must" be employed in such an instance. In the matter of drug administration it is well to allow much latitude of choice, notwithstanding the very direct indication. The diseases of the stomach and intestines seem to receive largest attention, and certainly are most ably treated. The authorities quoted are not many.

On the whole, this is really a very useful little book, and will admit of some amplifications in later editions and a few corrections, especially in the causation of disease.

A COMPEND OF DISEASES OF CHILDREN. By MARCUS P. HATFIELD, A.M., M.D. Philadelphia: P. Blakiston, Son & Co., 1890.

The book of Dr. Hatfield is a much more pretentious volume of about the same size as Powell's "Essentials," but much fuller in details. This begins with a very good chapter on anatomy and physiology, and as frontispiece has a very admirable diagram of fœtal circulation. This is by long odds the best one that has come under our observation in any of the books relating to this subject, showing as it does that after having once left the umbilical vein the fœtal blood is at no time arterial. The book is based upon Dr. Kormann's "Compend of Children's Diseases," in use at the University of Berlin. It has a great many added facts and numerous suggestions, evidently American, as to therapeutics, but offends throughout in a somewhat pompous and unwieldy nomenclature,

containing so much of Latin that, except for his Master of Arts' degree, we begin to fear that the author might be entirely unskilled in the classics. Taken as a whole, however, is very well arranged, and for so small a volume exceedingly thorough, dealing with all the important points of etiology, pathology, symptoms, differential diagnosis, prognosis and treatment. The pathological data are to be commended for succinctness and brevity. The treatment is modern and judicious and evidently culled from many sources. We can safely commend this book as a most useful addition to the library of the undergraduate, and, indeed, many medical men might peruse it with profit. Typographically it, like the others of this series from the Blakistons' hands, is excellent.

Essentials of Anatomy and Manual of Practical Dissection, together with the Anatomy of the Viscera. By Charles B. Nancrede, M.D. Third Edition. Philadelphia: W. B. Saunders, 1890.

That this anatomy should have run through its second edition within three years of its first appearance is a guarantee of the sound judgment and clear writing of the author. The book is written for students. They have stamped upon it their approval by the liberality with which they have purchased it. The knowledge of this fact disarms the carping critic, but encourages him who is just, and who well knows that it is as difficult, nay, even more so, to write a good little book than a passable big one, to express his admiration for the inimitable way in which Dr. Nancrede has accomplished the object he had in view. There are few keener surgical writers than the author of the "Essentials of Anatomy," few more profound searchers after the ultimate cause, none more capable of accurate and valuable scientific work. Yet he has been able to appreciate exactly what the student wants, and to give him pabulum not too strong for his digestion. To the present edition are added thirty lithographic plates in colors, the best that can be found in any modern work on anatomy, and a hundred and eighty-five wood-cuts. The book can be recommended to the student of medicine as the best of its kind.

Scheme of the Antiseptic Method of Wound Treatment. By Dr. Albert Hoffa. Translated from the German by Aug. Shachner, M.D., Ph.G. Louisville: The Bradley & Gilbert Company, 1890.

This chart presents very admirably the various chemicals and dressing materials used in antiseptic surgery, together with many formulæ and methods of preparation. The tables are well arranged for reference, and should be exceedingly useful, not only to the surgeon, but to the hospital resident and nurse, since here can be found at a glance not merely full directions concerning all that pertains to the antiseptic side of an operation, but specific instructions by means of which solutions, powders, drainage tubes, ligatures, sutures and dressing materials may be properly prepared. Thus, we find concisely but fully given directions for cleaning the hands, for cleaning or preparing the sponges, for disinfecting instruments, for making the various kinds of antiseptic gauzes. The chart will be serviceable to every believer in antiseptics.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND J. HOWE ADAMS, M.D.

Renal Hæmophilia.

Senator (*Berlin. klin. Wochenschrift*, Jan. 5th, 1891) details a case of this rare disease, and makes observations upon hæmophilia in general.

A woman, aged 19, single, consulted him Feb. 28, 1890. In December, 1887, with menstruation, hæmoglobinuria appeared. There was no anomaly of the generative organs. Two years later true hæmaturia developed, unconnected with menstruation. The patient was well built, but very pale. There was no disease of the internal organs. There was a painless discharge of bloody urine, the fluid being clear blood and containing corpuscles in the same proportion as in normal blood. In the absence of fever and the usual causes for hæmaturia the diagnosis of hæmophilia was made, and further questioning showed a tendency to bleeding on her father's side.

In spite of treatment the bleeding continued in increasing amount. Examination under chloroform showed the bladder normal and blood issuing from the right ureter, with normal urine from the left.

After consultation it was decided to remove the right kidney, which was done April 22, 1890. The urine contained blood on the first day after operation, but ever afterwards remained normal.

Examinations of the kidney showed star-shaped, isolated spots of interstitial nephritis. Blood was retained in small, dried spots, and had extravasated from some larger vessels. Fibrin in the larger vessels, and isolated foci indicated the presence of bleeding during life. Israel, who made the examination, considered this picture characteristic of hæmophilia.

The woman entirely recovered, and the left kidney did the work for both organs.

Only two cases resembling this have been reported.

It has been proved that the bleeding in hæmophilia may come from a certain point, the nose being the most frequent seat, and one side of the nose has been observed as the constant site of the hemorrhages. Senator thinks that plethora as a cause of hæmophilia must be abandoned, and that we must accept a local thin-walled condition of the vessels as the cause in some cases at least. In the cases where bleeding takes place from any indifferent site, he suggests that there may be more or less abnormality of the bloodvessel system over the whole body.

This view is of practical importance, and the point of bleeding must be sought. In the event of the failure of general treatment the case becomes amenable to surgical means, and where hæmophilia gives rise to bleeding from kidney it is a new indication for nephrectomy.

Primary Acute Encephalitis.

Strümpell (*Deutsch. Archiv f. klin. Med.*, Bd. 47, Hft. 1 and 2) says that while the different forms of primary myelitis are well known, primary inflammation of the brain (not

purulent) is practically unknown. We do not certainly know of any process going on in the brain, exactly analogous to chronic transverse myelitis. Actually acute inflammatory processes of the central nervous system are not limited to the spinal cord, but occur in the medulla, and may occur in the brain itself.

Acute encephalitis of children is well known from a clinical standpoint as *hemiplegia spastica infantalis*, but its anatomical cause is little understood. Primary acute hemorrhagic encephalitis of the adult until now has not been described, and until now acute encephalitis has meant only the septic form from which this differs. Two cases are quoted:

CASE I.—A man, aged 27, suddenly became unconscious. When the author saw the case the patient was entirely insensible, with dorsal decubitus, head drawn to left but capable of being turned to the right, nystagmus, pupils small, but reacting to light, no facial paralysis. The left leg and arm were paralyzed, the right in constant motion. Passive motion on right side was resisted, but not on left. There was no stiffness of neck; the patellar reflex was present. Temperature 103.1° F.; 106.1° F. after death. Pulse 88–84. Death in 36 hours.

Post-mortem.—Acute inflammation of white matter of right hemisphere, and a small spot in left; catarrhal pneumonia of lower lobe of lung; other organs normal.

CASE II.—Man, aged 67, developed sudden insensibility, and two days after onset of symptoms the following condition obtained: Closed eyes, half-open mouth and stertorous breathing. Sometimes he raised his right hand to head and groaned aloud. The face was red, eyes convergent, tongue protruded toward left, and paralysis of right cheek. The right arm was paralyzed, the right leg moved, the left but little. The reflex of sole of foot was slightly decreased, the patellar reflex was present on both sides. Striking right patellar tendon caused contraction of the right and left adductor femoris. Striking left patellar tendon caused great contraction of right adductor femoris and but little contraction in left. Temperature high, 106° F. Pulse 116 to 136.

Post-mortem.—Acute hemorrhagic softened centre in right parietal and occipital lobes and in left occipital lobe. Old scar formation in the upper part of left occipital lobe. Spleen infarct (old). Fresh kidney infarct.

Unquestionably both of these cases were due to primary acute hemorrhagic inflammation (not septic) of the brain. They were not due to infection, no bacteria being found in the parts. The second case was not due to emboli, as no embolus was found in the vessels. The ordinary signs of softening were wanting. They were not due to epidemic cerebro-spinal meningitis, as there were no other cases of this disease prevalent at the time.

Acute encephalitis is an organic disease, and probably not an infectious disease. The course is uncertain, but it is a very acute, fatal disease. It begins in sound persons and rapidly runs into stupor and insensibility. Hemiplegia was easily discovered in both these cases. The crossed tendon reflex observed in the second case is interesting, though not diagnostic of encephalitic hemiplegia. High temperature during the course of the disease with excessive ante-mortem temperature may perhaps be of diagnostic value, although this is common in embolus and hemorrhage, but the high fever from the beginning is not noticed, and may be indicative of encephalitis. The pulse frequency differed in the two cases, being only moderate in the first and very rapid in the second. It is quite possible that some cases may not cause death, but, as in the encephalitis of children, leave behind permanent paralysis.

The hyperæmia of the vessels, the wandering out of the great number of white blood cells, and small punctiform hemorrhages suggest acute primary hemorrhagic encephalitis as the proper descriptive term. The point of inflammation is always to be sought in the vessels.

ETIOLOGY OF TRISMUS NEONATORUM.

PEIPER (*Deutsch. Archiv f. klin. Med.*, Bd. 47, Hft. 1 and 2) believes that it is the generally accepted opinion that this disease is in some way connected with injury to the umbilical cord or umbilicus. It has but recently been thought identical with tetanus of adults.

Nicolaier, Beumer and others have shown this last named disease to be infectious, and dependent upon a special bacillus commonly present in the dust of living rooms. The

author and Beumer have found the tetanus bacilli in the umbilicus of children dead of trismus, and have produced tetanus in mice by inoculating them with parts of the umbilicus of the dead children. As a prophylactic measure he urges the treatment of the umbilicus and cord in a thoroughly antiseptic manner.

Emphysema of the Lungs.

Liebermeister (*Deutsch. med. Wochenschrift*, January 1st, 1891) speaks of the pathology and etiology of this disease and of its diagnosis and treatment. According to this author, emphysema means the abnormal distension of an organ with air, and emphysema of the lungs an abnormal distension of the alveoli of the lungs with air.

Vicarious emphysema occurs by the distension of one part of the lung because of the loss of function in another part. Substantive emphysema, the subject of this paper, is a definite disease, due to a diffuse distension of the air-vesicles.

The *inspiration* theory explains emphysema as due to unusually deep inspirations. This theory will explain the emphysema of special cases as when the expiration of air is hindered through capillary bronchitis or asthma. It takes place principally in the upper part of the lung. If the hindrance to expiration is removed, the lung tissue will retract. Such cases are best described as acute alveolar distensions (alveolar-ectasy).

The *expiration* theory explains emphysema as taking place through forcible expiratory acts due to a mechanical hindrance to the exit of air in the larger air-passages. The muscles used in forcible expiration act on the lower parts of the lung, drive the air into the upper parts, and cause an emphysema of them. This emphysema may become habitual when the hindrance to expiration is permanent, or when the expansion of the air-vesicles is so great that their elasticity is lost.

The *histological* theory considers an atrophy of the lung tissue as primary, and the distension an effect. Liebermeister believes all three of these theories necessary for the explanation of the disease.

Pathological Anatomy.—The lungs are increased in size. The borders encroach on the heart. When the thorax is opened the lungs do not retract. The lungs are, in proportion to their size, light in weight, they are dry and pale, and mostly beset with spots of dark pigment. Single air cells are large and often the size of a pin's head. The greatest distension appears in the upper parts, then on the anterior borders, and finally on the borders of the lower lobes. The walls of the alveoli are thin and atrophied. The capacity of the thorax is increased. The right heart is hypertrophied.

Symptoms and Course.—Percussion shows that the borders of the lungs are extended. Heart dulness is diminished, or cannot be demonstrated. The percussion-note in most portions of the lung is normal, though it may be tympanitic where the elasticity of the lung is lost. Sometimes the sound is shortened, and this is likely to take place in the upper part of the chest, and must not be confounded with the sound due to infiltration. A change in normal breath sounds is heard. Dry râles and sibilant rhonchi are present. Expiration is longer than inspiration. When catarrh occurs, often dyspnœa of the highest grade is induced. Expectoration is scanty, and often contains pearl-gray bodies of the size of a millet seed. After emphysema has lasted for a longer time the expectoration may be in greater quantity and thinner. Owing to the hindrance of circulation in the lung, the right ventricle of the heart is hypertrophied. As the ventricle becomes weakened it causes retention of blood in the right auricle and in the greater veins of the body, and finally hyperæmia of the liver and general dropsy. The veins of the neck especially are seen to fill during respiratory acts, and a pulsation is noted in the jugulars synchronous with the heart beat. An epigastric pulsation is noticed, due to the hypertrophy of the right ventricle. If the patient with emphysema lives a quiet life and is careful to avoid catarrhs, the length of life may not be shortened, but any intercurrent disease may cut life short through the weakened heart.

Treatment.—This may be mechanical, by means of pressure on the chest during expiration; or, better, the patient may breathe into a compartment filled with rarefied air. The most important part of the treatment is the management of the catarrhs. Fresh air and

change of climate are not absolutely necessary. In winter and in raw climates the patient should be at rest in a warm room. Mineral water resorts should be recommended in summer. When the heart begins to fail, rest in bed is absolutely necessary, and if this does not overcome the œdema, digitalis should be given. Three to four and a half grains of the powder (preferably in infusion) are given the first day, and continued until two quarts of urine are passed in twenty-four hours, or until the action of the drug is indicated in the pulse. Severe cough should be relieved by opium.

Cholera Infantum.

Rheiner (*Therapeut. Monatshefte*, January, 1891) calls attention to the frequency and great mortality of cholera infantum, especially among artificially-fed children.

He thinks the greatest harm is done by cows' milk, by reason of the great number of micro-organisms it introduces into the child's stomach. Milk has been proved to be sterile in the udders of cows, but in an hour after milking one cubic mm. contains 1,000,000 germs. The stomach of an artificially-fed child contains twenty times as many micro-organisms as that of a breast-fed child. Mothers increase the trouble by constantly overfeeding the children and supplying a nucleus for the bacteria to live upon.

After an excellent description of the disease, he considers it probably due to the formation of a chemical poison by the breaking up of the molecules of the bacteria, which is likely identical with the tyrotoxicon of Vaughn.

Treatment.—In cases where severe symptoms appear, and where it is evident that undigested food remains in the stomach, it is best to begin with washing out the stomach, either with lukewarm water, or with a .05 per cent. solution of resorcin, or a 2 per cent. solution of benzoate of soda. The stomach washing is harmful in the state of collapse. The indications are then to remove the contents of the intestine. It is best to begin with calomel; this is probably changed into sublimate and prevents putrefaction going on in the bowel. Opium, he thinks, should never be used unless the great number of stools make it imperative. It prevents peristalsis, inhibits the secretion of bile, and in these ways may be instrumental in bringing on collapse. He maintains the strength of the child by feeding it a teaspoonful, several times daily, of a mixture of equal quantity of yolk of egg and malaga. Thirst is relieved by exhibiting slightly sweetened water and cognac.

Rheiner calls attention to the fact that absorption of water from the upper intestine is interfered with, and quotes authorities to show that irrigation of the lower bowel per rectum is a most useful measure to restore water to the economy. It has the advantage that it can be used in private practice without trouble. Irrigation is performed as follows: A thick, soft catheter is oiled and passed into the rectum for a distance of one and a half to two inches. Water is then injected and the catheter afterward introduced still further up the bowel; in this way it may be inserted six inches into the bowel. Sometimes the irritation of the tube causes a copious movement of the bowels and the passage of masses of harmful material. The end of the irrigator should first be held low, then gradually raised higher and higher, and the water slowly injected. If there is a tendency for the water to regurgitate from the intestine, the anus should be compressed about the tube until the irritation is overcome. If the water does not flow freely from the irrigator, the end is either pressing on the wall of the intestine or it is stopped by masses of feces. The fluid should be either lukewarm water or a five per cent. solution of benzoate of soda, or six drops of creosote to three ounces of water. Soltmann uses for nurselings two and one-half to three ounces of fluid. Monti uses, at four months, one to one and a half pints; from four months to the end of first year, one and a half pints; for older children, two to two and a half quarts. The best rule is to use seven to eight ounces of water for children a few months old.

In the beginning of the procedure the stool is frequently so copious that it probably comes from the upper part of the large intestine. He allows the water to flow until it comes away clear. He then injects more water, which is probably better absorbed. The irrigation of the intestine is contraindicated in the stage of collapse.

Varieties of Hepatic Cirrhosis.

Saundby (*British Medical Journal*, December 27, 1890), in an interesting article on this subject, recognizes ten varieties: Alcoholic, cardiac or cyanotic, biliary, diffuse syphilitic, gummatous syphilitic, tuberculous, malarial, scarlatinal, rachitic and diabetic.

The alcoholic variety is caused by the abuse of alcohol. It is most frequent in adult males. The symptoms usually complained of are hæmatemesis, or abdominal dropsy; those who present the symptom of ascites are usually without hæmatemesis, and those who have hæmatemesis are usually without ascites. Dyspeptic symptoms are common. The skin is of earthy tint and rarely jaundiced. The spleen is usually enlarged, and the liver diminished in size. Cases of hæmatemesis are without dropsy, because the dilated veins surrounding the œsophagus allow the blood from the portal vein to reach the vena cava without passing through the liver.

The liver is small, granular and of an olive color, having bands of connective tissue in the portal canals surrounding groups of acini, and invading them from the periphery. Early and repeated tapping in cases of ascites may indefinitely prolong life if alcohol is abstained from.

The cardiac variety is due to the chronic congestion of the right side of the heart. The liver is enlarged and tender. The cirrhosis begins in the radicles of the hepatic veins. There are often slight jaundice and ascites.

The biliary variety he considers due to chronic obstruction of the common duct. Jaundice is the initial symptom; ascites is generally absent. The liver is generally enlarged, and he considers it the best-known form of what is called hypertrophic cirrhosis. The trabeculæ of fibrous tissue surround the single acini. The treatment is palliative, unless the obstruction can be removed by surgical means.

Diffuse syphilitic cirrhosis is caused by hereditary syphilis. The liver and spleen are both enlarged, and the lesion is diffuse. It is best treated with calomel.

The gummatous syphilitic form is due to fibrous tracts left by old gummata. The liver is puckered.

The tuberculous variety is little recognized. The liver is enlarged, the trabeculæ surround the lobules, and there is enlargement of the biliary canaliculi, but ascites is absent.

In malarial types of this disorder the liver is enlarged. The cirrhosis begins in the portal canals and invades the lobules. There is no ascites.

The scarlatinal form is known only to pathologists, and it may explain some enlarged livers found, *post mortem*, in children. There is increase of the fibrous material in the portal canals.

The rachitic variety is the cause of much of the gastro-intestinal catarrh in children. The liver is enlarged, and the fibrous material surrounds single acini. The treatment includes calomel and cod-liver oil.

Diabetic cirrhosis is little known. There is no ascites. The skin is bronzed, but jaundice is absent. The fibrous tissue is formed about the hepatic radicles.

Œsophageal Varices as a Cause of Hæmatemesis in Cirrhosis of Liver.

Stacey Wilson (*British Medical Journal*, December 27th, 1890) gives an illustrated article in conjunction with Ratcliff. He arrives at the conclusion that œsophageal varices are the main source of hæmatemesis in cirrhosis. This varicosity is due to dilatation of veins at the lower end of the œsophagus, whereby the blood can reach the vena cava without passing through the liver. The dilatation may prevent ascites, but the veins are liable to rupture.

The veins at the cardiac end of the stomach belong to the portal system. Veins at the lower end of the œsophagus belong to the systemic system; the capillaries of these two systems communicate.

In connection with the two plexuses, there is a plexus in the mucosa and submucosa of the œsophagus, which dilates enormously in obstruction to the portal circulation. The walls are thin and friable. Rupture of the veins of this plexus causes hæmatemesis.

This was first recognized in 1838, but, until lately, the dilatation was considered a pathological curiosity. When varicosity of these veins is recognized, hæmatemesis, due to capillary oozing, will be less commonly recognized. They are difficult to find, and may be demonstrated by inflating with air from the cut extremity of one vein.

There are no clinical symptoms until a profuse hemorrhage occurs. When there are signs of cirrhosis, and ascites disappears, these varices may be diagnosticated.

The prognosis is grave, though there may be repeated hemorrhage without death.

The treatment consists in keeping the œsophagus quiet. Ergot probably does harm, and amyl nitrite, theoretically, is indicated.

New Methods of Treatment in Typhoid Fever.

Dujardin-Beaumetz (*Bulletin Gén. de Thérapeut.*, December 30, 1890) studies prophylaxis of typhoid fever, and the use of intestinal antiseptics, cold baths and diuresis in the treatment of the disease.

Prophylaxis has been more benefited than has treatment by the discovery of the bacillus of Eberth. To purify water, boiling or sterilization is better than filtration. Rigorous care of typhoid patients is insisted upon; a strong solution of sulphate of copper, twelve and a half drachms to the quart, is recommended for washing sheets, water closets, etc.; a weaker solution, three drachms to the quart, is used to disinfect the nurse's hands and those portions of patient soiled by ejecta. In studying intestinal antisepsis, introduced by Bouchard, salol is preferable to iodoform, naphthaline, naphthol, etc., since it is less harmful and more efficient. Thirty to sixty grains may be given in twenty-four hours, in combination with salicylate of bismuth, if this drug is indicated.

Dujardin-Beaumetz does not regard hyperpyrexia as a part of the general condition of the disease, believing that typhoid fever can be serious without hyperpyrexia or that the temperature can be kept normal by antipyretics without decreasing the severity of the disease. He believes that antipyretic drugs decrease urinary secretion and retard elimination of the poisons produced. He finds that in sponging, enveloping in wet sheets and tepid baths, he has all the advantages of cold baths without their inconveniences. By a tepid bath he means one with a temperature of 86° to 89.6° F., making it about eighteen degrees below the patient's temperature; with these baths sedation of nervous phenomena is obtained, together with sufficient lowering of the temperature. Opposing Brand's systemization, he treats cases symptomatically; beginning with sponging, he gives tepid baths, if the temperature passes 104° F., one or two a day, lasting twenty to thirty minutes. Stimulating drinks are given patients, if needed, while in the bath. If ataxo-adymania becomes excessive, wet-packing is used instead; this pack is not continued for more than thirty seconds.

Sulphate of quinine is regarded as the drug best able to meet the general indications of typhoid, not more than fifteen grains a day being given. He does not believe that the benzoate of soda recommended by Robins increases the elimination of waste products; believing the kidneys are the best agents he gives abundant drinks, preferably lemonade made with wine, to favor diuresis.

He calls attention to the remarkable paper of Brouardel, showing the great influence of typhoid mortality on depopulation in France, the mortality in women being twice as great as in men. In studying the influence of the treatment on mortality, he finds that the difference under the various methods is trifling; in 1889, under symptomatic treatment, there was a mortality in the hospitals of Paris of 11.33 in a hundred; by systematized treatment with cold baths, the mortality was 11.28 in a hundred. The lowest mortality for the year, 7.33 in a hundred, was obtained by the combined use of quinine and tepid baths.

Debove has shown that prudence is necessary in reaching therapeutic conclusions from the study of statistics, for by the purely expectant plan without hygienic treatment, he had a mortality the same year, at the Andral Hospital, of 9.2 in a hundred. Beaumetz believes that this success rested largely on the diuresis obtained by Debove.

FURTHER INVESTIGATIONS ON THE DIURESIS PRODUCED BY MERCURIAL PREPARATIONS.

JENDRÁSSIK (*Deutsch. Archiv f. klin. Med.*, January 8, 1891), studying in an exhaustive paper this subject from a clinical and physiological standpoint, decides that all the non-irritant preparations of mercury, except inunctions, have decided diuretic properties, calomel being most certain and least liable to produce ptyalism. The greatest diuresis recorded as obtained by calomel is ten quarts daily, although the voiding of seven to eight quarts has been frequently noticed.

In cardiac dropsy he has been most successful, frequently removing widespread œdema entirely. In dropsy dependent upon pulmonary emphysema, the number of experiments was small and uncertain. In ascites of hepatic origin, some trials resulted in failures, others in fair successes. Generally these latter were associated with paracentesis, which in itself increases urinary secretion.

Jendrássik believes that polyuria is only possible with intact kidneys, yet he has had occasional good results in renal dropsy, reaching the following conclusions:

1. No nephritic symptoms complicating heart cases seem to prevent the appearance of diuresis.

2. Calomel, even if unsuccessful, has no bad affect on diseases of kidneys.

3. When Bright's disease is the only cause of œdema, usually urinary secretion cannot be increased by calomel.

Concerning pleuritic exudates, as in his first publication, negative results were obtained. On healthy organisms, calomel has no definite diuretic action. The element of polydipsia must always be considered in studying diuresis.

The physiology of mercurial diuresis is considered at length. This form of diuresis does not come from increased blood pressure, improved circulation, or activity excited in the kidneys, but from the re-absorption of the œdematous fluid by the blood, owing to the formation of a mercurial salt favoring endosmosis. Weinstein's theory that catharsis and ptyalism are the real agents in mercurial diuresis, Fürbringer's suggestion of irritation to the renal elements, Rosenheim's claim for the increased elasticity of peripheral vessels, the idea of the increased secretion of urea by mercury, of its action on red blood corpuscles and hæmoglobin and many other theories are discussed and dismissed.

In mercurial diuresis, two factors, sodium chloride and albumen, are considered. If mercury increased the sodium chloride in the blood, the re-absorption of the fluid would be explained, as sodium chloride increases endosmosis; but the salt percentage is not materially changed. Our knowledge of the form mercury takes in the blood is still uncertain, but undoubtedly among other combinations the oxy-albuminate of mercury is formed. This salt is prepared artificially from yellow oxide of mercury and albumen or blood serum. Test diffusion-experiments were made with this oxy-albuminate of mercury and simple albumen solution. When the concentration was equal, the quantity of water going into the albuminate of mercury solution was double that which passed to simple albumen solution. The connection between these data and the action of calomel-diuresis is clear. Little success is obtained by calomel in nephritis because the alkalinity and albumen of the blood are decreased, and hence this endosmotic salt is formed to a less degree.

J. reserves calomel for serious cases of heart trouble, where diuresis cannot be obtained by other agents. No contraindications prevent its use. To insure a successful result he insists that it shall be given only in the following way: eight to ten doses of calomel, a grain and a half each, are administered in one day; this treatment is rarely continued for two days, never after the commencement of diuresis. When diuresis is fairly established it generally continues for some time; the danger of ptyalism seems to be slight, this complication being observed but rarely, although these doses of calomel should be administered only under constant medical supervision.

In urine during this diuresis cylindroidal bodies occasionally appear, due undoubtedly to the washing out of the kidneys by the fluid.

Studies of mortality under this treatment reveal but few deaths attributed to ptyalism from faulty administration of the drug.

Acute Diffuse Peritonitis Following the Use of Copious Enemata in Acute Dysentery.

Ball (*N. Y. Med. Jour.*, Jan. 10, 1891) raises a note of warning against the too reckless use of injections in acute dysentery, reporting a case of a child, aged 7, in whom the injection of a pint of water containing a drachm of salicylic acid produced immediately acute general peritonitis, possibly due to the escape of the fluid through some unhealed portion of the inflamed bowel. Through ignorance another pint was subsequently injected; not any of the two injections returned by the bowels but there followed a great escape of urine, the kidneys seeming to take a vicarious function as if to relieve the overtaxed peritoneal cavity and bowels. The collapse which follows bowel perforation ordinarily may have been escaped in this case by the fact that it was an antiseptic solution. Opium pushed to its fullest extent controlled the disease, and the child recovered.

An Anomalous Case of Measles.

J. C. Wilson (*Med. and Surg. Reporter*, January 17, 1891) reports a case in a boy, 16 years old, anomalous in its sudden onset, with absence of coryza, insignificant catarrhal symptoms, erythematous sore throat and scarlatiniform eruption, appearing on neck, thorax and sides of abdomen, with abrupt rise and fall of temperature, reaching normal on the seventh day. It was only on the fourth day, when the fading eruption showed the exanthem of measles, that a correct diagnosis could be made. A brother exposed to the contagion developed typical measles.

Modern Treatment of Sciatica.

Prichard (*Amer. Jour. Med. Sci.*, January, 1891) emphasizes the fact that Leyden, Pitres and Vaillard, Erb, Remak and others within a decade have established peripheral nervous diseases on a scientific basis; incidentally sciatica being found to exemplify many of the pathological conditions observed. Consequently two conditions of so-called sciatica exist, sciatic neuritis and sciatic neuralgia. Prognosis and treatment depend on their differentiation.

Sciatic neuritis is recognized principally by the loss of tactile perception, paresis or paralysis, with the reaction of degeneration to galvanic currents, and trophic changes in skin, hair and muscles.

The anti-neuralgic and analgesic treatments of sciatica are useful in sciatic neuralgia, phenacetin being regarded as the most efficient remedy.

In sciatic neuritis the cause, mechanical and local or constitutional, must first be removed; the treatment then consists in relief of pain, reduction of inflammation and absolute rest of the part. The patient being placed in bed, a long hip splint is applied; for the inflammation, cold applications are to be used; morphine being given for the pain of the first stage. After the acute stage gentle massage hastens absorption of inflammatory products. Continuous galvanic currents also should be employed. In cases with tendency to chronicity, the cautious application of the interrupted current can be used later on. Specifics are disappointing, counter-irritants uncertain, and nerve stretching is valueless and dangerous.

Cardiac Complications in Gonorrhœal Rheumatism.

MacDonnell (*Amer. Jour. Med. Sci.*, January, 1891) reviews twenty-seven reported cases of gonorrhœal rheumatism with cardiac complications, and relates the history of several cases falling under his own observation. In regard to the nature of gonorrhœal rheumatism, he merely states that there is a form of joint affection associated with the discharge from the urethra, and that it is claimed that this is never associated with affections of the heart.

Cases such as the following disprove this. A young man, not personally or hereditarily disposed to rheumatism, in the fifth week of his second attack of gonorrhœa was ex-

posed to cold; he suffered from a succession of rigors, followed by slight joint pains. On the disappearance of these transient pains he was suddenly attacked with præcordial pain and dyspnœa. The physical signs of pericarditis were recognized. The urethral discharge continued, and the pericarditis disappeared. On the thirtieth day of his illness fresh effusion took place in the pericardium and pleura. Gradual absorption followed. Finally only a well-marked apical systolic murmur remained. Either this was gonorrhœal rheumatism, in which the endocardium, pericardium and pleura were attacked, or it was simply acute rheumatism with ordinary complications, the gonorrhœa being an accidental circumstance. The author believes that the gonorrhœa was the cause of the involvement of the serous membranes, for these reasons:

1. There was no previous history of any rheumatic manifestations. The patient had always been perfectly well.

2. The fact of cold acting as an exciting cause does not affect the probability of gonorrhœa having been the predisposing cause.

3. Pyrexia was not prominent at the onset of the disease, as would have been most probably the case in ordinary acute rheumatism.

4. The joints were involved to a very slight degree. The pain was mainly in the knees, and there was no metastasis. In children the joint affection of rheumatism bears no relation to the severity of the heart affection, but in adults cardiac affections commonly do not follow affections as slight as these were.

5. There was no sweating at any period of the disease.

The conclusions drawn are as follows:

1. A review of the literature of gonorrhœal rheumatism shows that those histories which present clear connection between gonorrhœa and heart affections are few. In some the heart lesion is open to doubt, in others ordinary acute rheumatism cannot be excluded. This estimate includes the cases reported by Colley, Pye Smith, Derignac and Moussons, Nolen, Loeb and those noted in the exhaustive paper by Gluzinski.

2. Although remarkably infrequent, cases do occur where the gonorrhœal poison attacks the endocardium, pericardium and pleura.

3. If such be the case, it is the duty of physicians to regard gonorrhœa in a more serious light, to confine patients to bed whenever the symptoms are at all severe, to examine more frequently the condition of the heart, and to ascertain, in chronic valvular affections without history of acute rheumatism, whether a possible cause may exist in a bygone gonorrhœa.

The Anti-fermentative Treatment of Infantile Diarrhœa.

Luff (*Lancet*, December 20, 1890), studying acute infantile diarrhœa caused by milk-fermentation, reviews Vaughn's work on the subject, and concludes that the cheese or milk ptomaine, tyrotoxicon, is the chief element of blame. The rational treatment is to destroy or render insoluble this substance, and to stop abnormal fermentative changes. He believes that the soluble biniodide of mercury accomplishes both of these objects, regarding the bichloride as a feebler antiseptic, more dangerous and not producing precipitation of the ptomaine in insoluble combinations. He combines the biniodide with chloral-hydrate for its sedative action on the irritated or inflamed bowel and exaggerated peristaltic action. The biniodide is produced by adding excess of potassium iodide to bichloride of mercury, making a soluble double iodide of mercury and potassium; a fiftieth of a grain of biniodide being given for a child up to six months old. The review of eighty cases shows that diarrhœa stopped within three days in seventy-two, within four days in five, and no case lasted over seven days.

The Bacillus Coli as a Cause of Enteric Fever.

Chalmers (*Lancet*, December 20, 1890), in the report of a local outbreak of enteric fever, questions whether septic bacteria may not, under certain conditions, acquire pathogenic properties, reviving Murchison's contention that enteric fever may arise spontaneously

from decomposing sewage. Doubting Rodet's statement of the relationship between the bacillus coli communis and the bacillus of Eberth, yet the author acknowledges that isolated outbreaks of enteric fever occur which resist every effort to fix their origin in some previous case. The outbreak was limited to three persons living in a detached population of miners, careful study attaching suspicion only to the local water supply, which was contaminated by sewage. No other cases of enteric fever had occurred in this region for at least five years. The only source of doubt which makes the inquiry uncertain was the possibility of the presence of an ambulant enteric patient.

SURGERY.

UNDER THE CHARGE OF

D. HAYES AGNEW, M.D., LL.D., AND J. WILLIAM WHITE, M.D.

ASSISTED BY

G. G. DAVIS, M.D., M.R.C.S., AND THOMAS R. NEILSON, M.D.

Surgery of the Central Nervous System.

Victor Horsley (*British Med. Journal*, December 6, 1890, p. 1286).

In Table I he gives the various conditions of the brain and spinal cord in which it is justifiable to operate. He urges in the most emphatic manner the necessity of operating on every case of depressed fracture of the skull, whether it is or is not accompanied by external wound of the soft parts or by immediate symptoms of gravity. It avoids future trouble. In laceration of the brain, whether simple or compound, the depression should be elevated, the dura opened, the clots and bruised brain removed, the dura sutured and the bone returned.

In simple apoplexy, ligature of the common carotid should be performed. This not only lessens the flow of blood from the lenticulo-striate artery, but in a few seconds even from the middle cerebral. If a patient has had a slight hemorrhage it would be justifiable to tie the carotid as a prophylactic measure.

Table II consists of four cases of cephalalgia following injuries, operated on by the author. The good results obtained by draining the peritoneal cavity in tubercular peritonitis might not improbably be obtained in meningitis if trephining were similarly resorted to.

In brain tumor he urges that unless notable improvement is obvious after large doses of iodide have been given for six weeks, treatment by drugs should be abandoned, and exploratory operation should be resorted to. In gummata and pachymeningitis *post-mortem* evidence shows that medical treatment in nowise cures, but only alleviates; excision offers the only chance for the patient. Operation is justifiable in all cases of tumor for the sake of the relief it affords, even if a cure by removal is impossible.

Table III refers to focal epilepsies. Operation is advised in all those cases where an initial spasm of one segment or part of the body can be detected. The locality giving rise to the initial spasm should be excised. Cases should be observed five years before being accounted cured. Encephalocele may be operated on by electrolysis, if small, and by excision, if large.

Table IV gives causes of death after operative procedures. The general death rate is 21 per cent. This is entirely due to previous hopeless conditions, such as extensive injury, septic meningitis or very advanced condition of cerebral tumors. The immediate cause of death is invariably shock, and this not from loss of blood or undue prolongation of the operation. This is to be obviated by an early and universal recognition of the futility of treatment by drugs.

Table V includes the spinal troubles operated on by the author. Out of nineteen cases of trephining of the spine, opening the theca in six cases, there was one death; that was from shock. This gives a mortality of a little over 5 per cent. Usually the only risk is sepsis.

In fracture of the spine operation should be done in all cases where displacement or crepitus indicates compression, and when extension directly after the accident clearly fails to reduce the deformity.

In acute cases of caries of the spine operation is likely to be unsuccessful, but when there is great pain the spine should be trephined posteriorly.

In so far as the risk attendant on operation is concerned, in view of the inevitable fate of such cases not surgically treated, it is certainly not worth considering. If even the slightest improvement is noted it can fairly be claimed for the operation, inasmuch as retrogression and death otherwise infallibly occur.

Peroxide of Hydrogen.

L. V. Dittel, Jr. (*Wien. klin. Wochenschr.*, 1890, No. 24), tried peroxide of hydrogen on some cases of empyema with fistula. Its use was not satisfactory. In one patient the injection gave rise to very serious symptoms, necessitating its immediate suspension. Whether this was caused simply by the washing itself, or by the rapid evolution of gas, or by a direct toxic action of the peroxide, cannot definitely be said.

That the peroxide of hydrogen does possess an antiseptic action can readily be demonstrated by bacteriological experiments, but this is due rather to an interference with the growth of the staphylococcus pyogenes aureus than to a direct lethal action on this bacterium.

Administration of Chloroform.

Dudley W. Buxton (*Lancet*, No. 24, vol. ii, 1890, p. 1260) discusses the following points: How far is chloroform a dangerous agent, in what does the danger consists, can this danger be abrogated by methods of administration, and how does it compare in safety with other anæsthetics.

One death to 3,000 inhalations is within the mark. Death may be due (1) to impure chloroform, (2) to careless anæsthetization, (3) to careful but faulty methods, (4) to the direct effects of the anæsthetic.

(1) Impurities betray themselves by their irritative effects, and they account for but few cases.

(2) Careless anæsthetization is a more common source of danger and likely to become still more so if the belief becomes general that the heart is unaffected by chloroform and that a percentage of chloroform vapor above four is perfectly safe.

(3) Some methods are open to cavil, but the commonly used ones are not faulty in principle but become dangerous through heedlessness.

(4) Chloroform kills through respiratory paralysis; all admit this, but there is a division of opinion as to whether it also occasions death through reflex shock or by direct and primary heart syncope.

The Hyderabad Commission has definitely assumed the position that respiration always fails before cardiac syncope occurs. Snow and the older authorities fully recognized primary heart failure, and the Glasgow Committee, both in the original and recent reports, have distinctly asserted that even among lower animals it occurs. Again, the independent testimony of Prof. Wood, of Philadelphia, has been given to the occurrence of primary heart failure. Chloroformists say that deaths are due to primary heart failure. The author has found in administering chloroform that the heart flags even when the respiration shows no alteration, *i.e.*, that distinct and unmistakable cardiac enfeeblement occurs. This is progressive, and likely to end in cardiac syncope unless prompt measures are used. In some cases partial asphyxia occurs, but it yields to artificial respiration. While thus contending that chloroform kills through the heart as well as the respiration, Buxton would not be understood in any way to deprecate its use and value in suitable cases.

The Effect of Atmospheric Pressure on the Trachea after Tracheotomy.

Girod (*La Pratique Médicale*, No. 51, December 23, 1890) gives the results of his researches on the effects of atmospheric pressure on the trachea after tracheotomy. Experiments on the cadaver show that when one ring is cut the air has free egress, but it enters with difficulty. When several are cut the trachea has a tendency to collapse, because, being membranous behind and the rings being cut in front, there is nothing to keep it open. In tracheotomy, as soon as the incision is made, atmospheric pressure forces the sides of the trachea together, and asphyxia results. This is to be met by introducing the canula. On its removal asphyxia is again apt to occur if from any cause the inspiration becomes violent. After the external wound has healed, suffocative attacks may still occur because the cartilages have not united but are simply connected by cicatricial tissue.

In view of these facts the operator should act quickly and make a small incision. One may also use the trocar-pointed canula which the author proposed in 1877.

Incision of the cricoid cartilage is not followed by stenosis from atmospheric pressure because it is a complete ring. Incision of the first ring is not subject to this accident because it is maintained in place by its attachments to the cricoid above.

Extirpation of the Larynx and Pharynx with the Formation of a New Gullet by Means of Skin Flaps.

Poulsen (*Centralblatt f. Chirurgie*, No. 1, 1891) performed this operation on a man, aged 56 years, on October 12, 1889. Chloroform was used. First a tracheotomy low down was made, and a sub-hyoid pharyngotomy. There was little bleeding. The epiglottis being drawn forward by a silk thread, an examination by the finger was made. A vertical incision through the skin in the median line was then carried down to a finger's breadth above the tracheotomy wound. Two small lateral incisions were made below, and the two flaps, the bases of which reached to the middle of the sterno-mastoid muscle, were laid back. By cutting through the trachea and œsophagus immediately below the cricoid, the larynx and pharynx were removed. Iodoform gauze was placed in the trachea, and the two flaps were turned in and sewed above to the posterior wall of the pharynx, below to the œsophagus, and were united in the median line by sutures which included also the prevertebral connective tissue. An œsophageal tube was passed through the nose and down into the œsophagus, the flaps being pressed closely to the parts beneath by an iodoform gauze dressing. The operation lasted one and a half hours.

Healing was prompt everywhere. In three weeks an anterior wall was formed. Transverse incisions were made from the pharyngeal opening above and the œsophageal opening below, the outer ends being joined by an incision parallel to the sterno-mastoideus. The two flaps so formed were folded inward and united above to the pharyngeal wound, below to the œsophagus, and in the median line to each other. Silk sutures were used.

Everything healed but a point low down, where a piece the size of a five-cent piece sloughed. Several attempts were made to close this, after one of which the patient died from septic pneumonia, seven weeks after the first operation.

Before death the patient could swallow liquids when this opening was plugged up. The upper tracheal opening had contracted to the size of a probe.

Removal of Large Calculi, First from one Kidney and Afterwards from the Other; Death from Hemorrhage.

Rickman J. Godlee (*Boston Med. and Surg. Journal*, Jan. 15, 1891) removed a number of uric acid and phosphatic stones from the left kidney of a patient who suffered from renal symptoms for four years; recovery followed.

Two years later many uric acid stones were removed from the right kidney. No bleeding followed the first incision, but the laceration caused by the removal of the stones gave rise to very free venous hemorrhage, this was easily controlled by plugging the pelvis. The

patient remained in fair condition for an hour and a-half and then suddenly died from fresh bleeding from the kidney.

The Parasitic Origin of Cancer.

J. Collins Warren (*Boston Med. and Surg. Journal*, Jan. 15, 1891, p. 53) presents some notes collected for teaching purposes as they embody some recent contributions to the subject.

Bacteria in Cancer.—Scheuerlen reported in 1887 a cancer bacillus obtained from material taken from cancer of the breast, and grown in ascitic and hydrocele fluid. It was a short bacillus readily stained with ordinary agents. It was not found in the sections but in the cancer juice. Inoculation of bitches with the pure culture produced a hard tumor which, in four weeks, was found to consist of epithelial cells in which the spores of the bacilli could be seen. Francke at the same time obtained a bacillus of sarcoma. He also obtained the cancer bacillus from carcinomatous growths but failed in his inoculations. These observations have not been confirmed; and Senn, Baumgarten and others are not disposed to accept them.

Protozoa in Cancer.—Within the last few years the view has been gaining ground that the glistening bodies which form the centre of the nests in epithelial cancer are animal parasites consisting of only a single cell, and belonging to one of the numerous forms of the protozoa. Balbiani (*Virchow's Archiv*, Bd. 115, Heft 1, p. 176) classifies them as sporozoa and gives five species: the gregarineum, coccidium, sarcosporidium, mynosporidium, and the microsporidium.

The coccidia are found in epithelial cancers. They consist of fine granular masses of protoplasm, with a nucleus not readily seen and without an enclosing membrane during growth. During this period the coccidium lives in an epithelial cell and becomes encysted. Before sporulation takes place it breaks away from the cell and may be voided from the intestines of the affected animal. There are several sub-varieties of coccidia. They have been found in the intestinal canal of man, in pleuritic effusions and in the kidney in Bright's disease.

The contagious nature of molluscum contagiosum was proved by Retzius in 1870 by inoculation, and Neisser in 1888 proved the corpuscles to be coccidia. Darier and J. C. White described a new skin disease in which the coccidia were demonstrated to exist in the epithelial cells. Malassez, Balbiani, and Albarran confirm these observations.

These organisms are not found in epithelial cancers alone. Thoma (*Fortschritt der Med.*, 1889, No. 2) found them in cancers of various organs. Wickham (*Maladie de Paget*, Paris, 1890) and Darier found the coccidia not only in the preliminary eczema of the nipple but also in the subsequently diseased gland. According to Wickham these organisms exert a direct pathogenic action on the epithelial cells. Cornil has seen similar organisms in certain cancers, and they have been seen in cases of rodent ulcer.

Nils Sjöbring reported on a protozoa-like organism which he observed in several cases of cancer of the breast. In its earliest stage it appears as a small, round, protoplasmic body, about two micro-millimetres in diameter. Several are found in each alveolus. It penetrates the nucleus of an epithelial cell. It is surrounded by a clear zone. Later it emigrates from the nucleus and increases in size. It has no cell wall and enters its free stage of existence and can be found between the cancer cells or mammary ducts. Later it enters the cancer cell and becomes surrounded by a membrane. It then begins the process of sporulation. A number of bright, egg-shaped bodies, each containing a spore and protoplasm, are formed and the membrane rupturing the spores are set free, and the protoplasm enters the nuclei of new cancer cells and again begins the cycle of development. The organism has a very destructive influence on epithelial cells.

Sjöbing regards these parasites as being similar to the micro-sporidium of silkworm disease. He found them in six out of seven cases. He also found them in a case of primary cancer of the liver and of the prostate gland. No culture experiments were made.

Hanau succeeded in transmitting epithelioma from a rat to two other rats, also in transplanting an epithelioma from one part of the body to another. Wehr has caused cancer of the peritoneum in dogs by transplanting from man.

Pfeiffer (*Die Protozoa als Krankheitserreger*, Jena, 1890) describes the relation of the protozoa to certain pathological conditions, more particularly in animals.

Tapping of the Ventricles of the Brain.

A. W. Mayo Robson (*British Med. Journal*, Dec. 6, 1890) advocates trephining and tapping of the ventricles in inflammatory conditions ending in coma. He details a case in which this was done with good results.

Draining may be advisable in some cases and one need not fear the loss of cerebro-spinal fluid as long as the wound is kept aseptic. The anterior part of the ventricles may be reached by pushing a hollow needle horizontally inward through the posterior extremity of the second frontal convolution; the middle part through the lower end of the second parietal convolution, and the posterior part through the posterior extremity of the superior temporo-sphenoidal lobe.

The following points are suggested: (1) Administer a purgative the day before operating. (2) Head to be shaved and washed, and site of operation rubbed with benzine. (3) Chief convolutions, etc., mapped out with nitrate of silver. (4) A carbolic dressing applied. (5) The anæsthetic to be the A. C. E. mixture. (6) Strict antiseptic precautions. (7) The skull to be marked at the necessary point with a drill. (8) If a large opening is desired, make a semilunar flap, if a small one for tapping then a vertical incision an inch long. (9) If it is desired to drain, the dura should be incised around three-fourths or two-thirds of its circumference, one-sixth inch from the bony margin. (10) Avoid puncture of vessels and important parts. (11) Avoid lateral movements of the needle. (12) Punctures to be made vertical to the surface. (13) To introduce a drainage tube, use a fine director, along which Lister's sinus forceps can be pushed to dilate the puncture and introduce the tube.

Recurrence of Cancer and its Prevention.

The above is the title of an instructive lecture delivered at the London Cancer Hospital by Herbert Snow (*Lancet*, December 27, 1890). Using the word "cancer" as a synonym of "malignant disease," the lecturer contrasts the two theories of the constitutional and the local origin of these neoplasms, showing that the latter is supported by clinical experience, that infection takes place along certain definite paths, that instances appear to be unknown in which two simultaneous developments of the disease have appeared in different parts of the body (or even of the same organ), and that heredity cannot be traced in the majority of instances. He regards the term "recurrence" as a misnomer, since the phenomenon is really a reappearance of the malignant development of cells, etc., after seeming extirpation. The aim of surgical treatment, he says, should be the complete removal of the growth before secondary infection has taken place. This object can be attained alone through early diagnosis, which must be made through consideration of the general and local conditions liable to lead to malignant disease. He calls attention to the protracted *mental distress* which is commonly the sole immediate antecedent of malignant tumors of the breast and uterus. In doubtful cases, whether the tumor be in a lymphatic gland or in the breast, exploratory incision is recommended; and in women presenting uterine symptoms, who have been long subjected to mental suffering or other debilitating agents, early vaginal examination is urged. Age is mentioned as an important consideration in diagnosis, in the case of the breast, thirty-eight years being a rough practical guide, the presumption being in favor of malignancy of a tumor appearing at or subsequent to that age.

In regard to the lymphatic glands, through which secondary infection commonly proceeds, the lecturer considers it judicious to assume that it has taken place whether there are apparent signs of it or not, tenderness and pronounced enlargement being comparatively late signs of involvement. He considers it necessary to remove those glands most prone to receive contagion in every case; the only exception which he makes to this rule being in cases of malignant disease not prone to rapidly infect the glands, or in which their removal would be attended with risk, when, unless they show signs of infection, they may be left

behind, the case, however, being subsequently closely watched for the occurrence of such signs.

Taking scirrhus of the breast as typical of malignant growths as a class, Dr. Snow formulates some general rules for its removal, which may be summed up as follows: It is necessary to remove a wide margin of the seemingly healthy parts, since the palpable tumor occupies but a portion of the tissues actually diseased. The contents of the axilla should in every case be removed, it being rare to meet with an instance in which infection of the near lymphatic glands has not already taken place. The whole parenchyma of the breast should be removed unless the growth is very minute and recent. If the growth has involved the surface, or is near the skin, a large portion of that structure should be removed. The incisions should be made vertically down to the fascia; otherwise, if after the first cuts, the parts are divided obliquely, infected spots are liable to escape. When the disease is a-central the first incision should be made the nearer of the two to the seat of disease. The aim of securing union by the first intention should be sacrificed to that of affecting thorough eradication of the disease. Careful search should be made for outlying axillary glands, portions of mammary parenchyma, malignant nodules, and for the chain of lymphatics hidden under the border of the pectoralis major. For two years after the operation the patient should be kept under observation, and the first evidence of "recurrence" promptly removed.

An Unsuccessful Case of Digital Dilatation of the Pylorus for Cicatricial Stenosis.

E. G. Cutler and M. H. Richardson have reported an interesting case of pyloric stricture in which the above operation was followed by a fatal result (*Boston Med. and Surg. Jour.*, December 18, 1890).

The case presented a history of long-standing acid dyspepsia, with attacks of vomiting, in an early one of which the ejecta contained a considerable amount of blood. There was enormous dilatation of the stomach, and marked emaciation; but there was neither pain, tumor, nor cachexia, and the diagnosis was made of stenosis probably due to the cicatrization of a gastric ulcer.

For the relief of the constriction, Dr. Richardson performed digital dilatation. Exposing the stomach by a four-inch incision extending from the ensiform cartilage to the umbilicus, and drawing the pyloric end out for four inches, he made an incision between the greater and lesser curvatures three inches from the pylorus, inserted a finger into the stricture, and, at the end of twenty minutes, succeeded in divulsing it so as to permit the passage of a second finger. The operation was completed by closing the wound in the stomach by a continuous silk suture of the mucous membrane, and Lembert sutures of the peritoneal coat, the abdominal wound being closed in the ordinary way. The patient reacted but poorly from the operation, and remained in a feeble condition, with nausea and vomiting at times, and died on the fourth day, the result being attributed to his extreme condition of emaciation.

Dr. Richardson considers that this operation must be regarded as a palliative measure, since the divulsion of strictures of other mucous canals is known to be followed by recontraction, and says that a more reasonable procedure would seem to be the establishment of an anastomosis between the stomach and the small intestine—gastro-enterostomy—experience, however, being yet insufficient to decide this.

Diagnosis and Cure of Adenoma of the Stomach.

Commenting upon a case of fatal acute peritonitis resulting from perforating ulceration of an adenoma of the stomach, and taking into consideration facts derived from reports of other cases by Pisenti and Barcome, Albertoni (*Jour. de Méd. de Chirurg. et de Pharmacol.*, Brussels, December 20, 1890) draws some conclusions which may aid in reaching a diagnosis of the affection. He says that the growth may exist without producing any external symptom or disturbance of function; that it occasions no grave symptom until ulceration occurs; that in a young person presenting symptoms of gastric ulcer without the

usual causes, adenoma may be suspected, and is more probable if tumor be discovered; that if the latter be recognized, the diagnosis will be in favor of adenoma and against cancer, when, first, the symptoms are of long standing; secondly, when a nearly normal amount of hydrochloric acid is found in the vomited matters; and, thirdly, when nutrition is fairly well preserved, considering the duration of the symptoms. When the diagnosis of adenoma is established, he deems it expedient to consider surgical intervention—that is, extirpation of the tumor.

Duration and Method of Treatment in Syphilis.

The plan of treatment employed by Leloir, of Lille (*Boston Med. and Surg. Jour.*, December 18, 1890, from *Monatsheft. f. prakt. Dermatol.*, Bd. vi, No. 6), is as follows: The initial lesion is treated with applications of a mercurial preparation. Constitutional treatment, which is withheld until secondary symptoms appear, consists of daily inunctions of from thirty to sixty grains of mercurial ointment, and the first course is continued for a period of from six to ten months. An interval of freedom from treatment for three weeks to two months is then allowed, and the inunctions are again instituted and kept up until the end of the second year. To prevent the accumulation of the drug, a diaphoretic or a laxative is occasionally given; and in the exceptional cases in which headache or bone pains are severe, iodide of potassium in combination with the bromide is prescribed. After the end of the second year, the course depends upon the severity of the case. If symptoms have been absent for a long period, the inunctions are made every three months for ten days, and then the iodide of potassium is exhibited for several weeks, in doses of from thirty to forty-five grains daily. After the third or fourth year, if there has been absence of symptoms for one year, the inunctions are made twice a year for ten days, and followed by a course of the iodide as before. This plan is continued if the patient is seen after the fourth year.

Leloir avoids the internal administration of mercury, on the ground that it may give rise to unfavorable symptoms, and employs it only when there is some reason why the inunctions cannot be practised. Hypodermic injection of mercurial preparations he seldom resorts to, and then only in hospital patients.

A Method for Removing Tattoo Marks.

Variot (*Jour. de Méd. et de Chirurg. Prat.*, January 10, 1891) details the procedure which he adopts for the removal of these disfigurements. The skin to be decolorized is first washed with a concentrated solution of tannic acid, and is then closely punctured with a set of needles, such as tattooers use. A crayon of nitrate of silver is next thoroughly rubbed over the area, and after a moment the skin is dried off, when it will be found that the punctures are deeply blackened by the formation of the tannate of silver in the superficial layers of the skin. The cauterization is said to result in an inflammatory reaction for a couple of days, and subsequently in the formation of a crust or thin eschar, which separates spontaneously in from fourteen to eighteen days, leaving beneath it a superficial red cicatrix, which gradually loses its color, and at the end of a few months, M. Variot states, is scarcely perceptible. He does not consider it expedient to attack at one sitting an area larger than a five franc piece, lest the inflammation provoked should be too severe, and interfere with the pursuance of the daily duties of the individual. The only dressing which he employs after the little operation consists in keeping the part powdered with tannin.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D.

ASSISTED BY

DAVID CERNA, M.D., PH.D., AND THOMPSON S. WESTCOTT, M.D.

Ichthyol and its Preparations.

In a communication to the Societé de Médecine Pratique de Paris (*Bull et Mem de la Soc. de Méd. Pratique de Paris*, December, 1890) Gillet de Grandmont reviews the uses and preparations of this drug.

Ichthyol itself, and especially the ichthyolates of ammonium, sodium, lithium and zinc have been advantageously employed, both externally and internally. As a whole, ichthyol has been found to be a powerful antiphlogistic remedy. Unna has employed it particularly in skin diseases, and internally in doses of from fifteen to sixty grains. Patients, under its use, have increased in bodily weight. Zuelzer, of Berlin, has used the ichthyolates with good results in the treatment of vesical catarrh, chronic blennorrhagia, spermatorrhœa, pyouephritis, uterine affections and in Bright's disease. Grandmont himself reports a case of rheumatic iritis, with albuminuria, in which the internal use of ichthyolate of ammonium stopped the elimination of albumen.

This preparation, in the form of solution in water or glycerine, or as an ointment, is especially employed in surgical practice, owing to its resolvent action and its power of constricting the capillaries. Nussbaum affirms to have obtained good results in the treatment of erysipelas and even in diseases of rheumatic and gouty origin. The sulpho-ichthyolate of ammonium may be given in daily doses of from fifteen to sixty grains for adults, and for children in from three to seven and a half grains.

For external use a watery solution of any of the ichthyolates may be employed in the strength of ten per cent., or in the form of an ointment, twenty-five to thirty per cent. The following formulæ are also recommended:

For *Articular Rheumatism*:

℞. Alcohol . . . . . 3 ounces.
Ammonium ichthyolate . . . . . 2½–8 drachms.

For *Erysipelas*:

℞. Ammonium ichthyolate . . . . . 1½ ounces.
Æther . . . . . 6 drachms.
Glycerine . . . . . 6 drachms.

℞. Ammonium ichthyolate . . . . . 6 drachms.
Æther . . . . . 6 drachms.
Collodion . . . . . 1½ ounces.

For *Dental Neuralgia*:

℞. Ammonium ichthyolate . . . . . 2½ drachms to 1½ ounces.
Vaseline . . . . . 3 ounces.

Hypnal.

Writing upon this substance, Frankel (*Bull. Gén. de Therap.*, t. cxix, p. 249) says that it is a chemical combination of chloral and antipyrine; very slightly soluble in

cold water, more soluble, however, in boiling water and alcohol. It does not cause irritation of delicate stomachs, like chloral. According to Schmitt, of Nancy, the drug is a powerful hypnotic and fifteen grains of it is equal to nine grains of chloral hydrate.

Hypnal produces lowering of the temperature, and acts like chloral on the respiration. It lowers arterial pressure, diminishes the number and strength of the heart beats, but its whole range of action is less marked than that of chloral. Given by the stomach, it is more toxic than chloral. In summing up the conclusions in regard to the actions of this hypnotic, Frankel says:

1. Hypnal is a well-defined chemical combination; less soluble than its components chloral and antipyrine.

2. Hypnal is almost tasteless and has no odor, giving it a real superiority over chloral, on account of being easily administered to children especially.

3. The properties of its components, chloral and antipyrine, are manifested in the administration of hypnal, a remedy at the same time hypnotic and analgesic.

4. The chemical combination of chloral and antipyrine produces a veritable therapeutic compound, and the hypnotic properties of chloral are exalted by the nervine properties of antipyrine.

5. Hypnotic properties are produced with about one-third or half the dose of chloral.

6. The drug is especially of service in the insomnia caused by pain.

In administering hypnal, it is necessary to prescribe it in its natural state in order to obtain an active medicine and not the mixture of the two bodies composing it. The remedy produces calm and restorative sleep, and causes no disagreeable after-effects. It modifies the spasmodic cough of pneumonia. It may be given in alcohol as follows:

℞. Chartreuse . . . . . 1 drachm.
Water . . . . . 4 drachms.
Hypnal . . . . . 15 grains.

The drug, in fifteen grain doses, causes sleep and cessation of pain in from one half to one hour. It may be administered in as high doses as sixty grains.

The Action of Yeast.

According to Edward Boinet (*Bulletin général de Therap.*, t. cxix, p. 241), yeast injected into the veins, subcutaneous tissue, or taken by the stomach in the rabbit, produces no inflammatory phenomena. Added to a culture of typhoid bacillus, yeast attenuates its virulence. The employment of yeast has given advantageous results in the treatment of typhoid fever, thrush and diphtheria.

Heer has used it with success in an epidemic of the latter disease. Internally it was administered in dessertspoonful doses every hour, and as a gargle one part to five of water. Its innocuousness and the attenuation that it exercises on a series of pathogenic microbes will warrant the multiplying of the therapeutic trials of yeast.

Physiological Action of Kava-Kava.

From a study of this drug, David Cerna (*Therapeutic Gazette*, January 15, 1891) has arrived at the following conclusions:

(1) Kava-kava produces general anæsthesia, and is especially a powerful local anæsthetic. (2) The drug diminishes and finally destroys the function of the afferent nerves, by affecting their peripheral ends. (3) Kava-kava diminishes and eventually abolishes reflex action by influencing the spinal cord, and probably also the sensory nerves. (4) The paralysis produced by kava-kava is of spinal origin, and is due to an action upon the cord. (5) Kava-kava, while increasing the force of the heart, diminishes the number of pulsations by stimulating the cardio-inhibitory centres and ganglia, chiefly the former. (6) The drug lowers arterial pressure through an action upon the vagi. It afterward elevates it, however, especially after previous division of the pneumogastrics by a direct action on the heart. (7)

Kava-kava at first stimulates, afterwards depresses and finally paralyzes the respiration. The primary stimulation is due to excitation of the pulmonary peripheries of the vagi; the latter effect to an influence exercised on the respiratory centres of the medulla oblongata. (8) Kava-kava, in small doses, increases slightly and in large quantities diminishes the bodily temperature. (9) The drug increases notably the salivary secretion.

Compound Tincture of Cinchona in Rheumatic Fever.

C. C. P. Clark (*Therapeutic Gazette*, December 15, 1890) reports three cases of rheumatic fever treated with Huxham's tincture of cinchona, in which the happiest results were obtained after other measures had failed. One of the cases was that of a boy, 14 years of age; the other two were adults. All recovered entirely in less than a week.

The medicine was given in half-ounce doses every four hours. The author states that he has cured a dozen more patients with almost exclusively the same treatment, and further remarks that the locality of his practice is free from malaria. The effects observed in the disease referred to are attributed solely to the action of the cinchona tincture.

A Case of Poisoning by Antipyrine.

Biggs (*N. Y. Med. Jour.*; January 10, 1891) reports a case of antipyrine poisoning, interesting chiefly because of the prominence of the renal symptoms. A moderately robust middle-aged man, accustomed to use antipyrine for headache, took sixty grains in divided doses in thirty hours. This produced urine of rather high specific gravity, having the dark olive-green color of carbolic acid poisoning, with a small amount of albumen, many red blood corpuscles and numerous small hyaline casts. This continued with a scanty secretion for forty-eight hours, then gradually disappeared. No renal disease existed previously, and after the attack the urine became entirely normal again.

In this relation the writer cites Eloy's conclusions that antipyrine should not be given in antipyretic doses to fever patients because of its interference with the action of the kidneys, and that it is contraindicated in acute febrile conditions associated with nephritis. Reported cases are cited of uræmia, retention of urine and fatty degeneration of the kidneys and liver following the use of antipyrine.

Dietetic Treatment of Epilepsy.

Whether the theory of explosion of nitrogen in the brain substance as the cause of the epileptic seizure be true or not, certain it is, according to John Ferguson (*Therapeutic Gazette*, Dec. 15, 1890), that the malady is aggravated in patients subjected to a nitrogenous diet. This fact seems to have been confirmed by clinical experience and actual experimentation. Ferguson, therefore, acting on the strength of such a fact, has subjected his epileptics to a strict vegetable diet, and has even dispensed with the use of drugs. This method has given, in his hands, excellent results, especially in well-marked cases of status epilepticus. In these cases a non-nitrogenous vegetable diet alone has rendered better service than the bromides, without restriction in diet.

Strophanthine in the Treatment of Respiratory Diseases.

Rothziegel (*L'Union Médicale*, No. 140, 1890—*Nouveaux Remèdes*) finds that the alkaloid influences notably the respiratory apparatus and lessens the frequency of the cardiac beat in doses of from 0.0002 to 0.0003 grm. This latter action disappears on the second or third day. It is perhaps less active than digitalis, but its effects persist longer even after the suspension of the drug. Strophanthine ameliorates the dyspnœa and palpitations of organic heart disease, the former being relieved before the latter symptom. The drug is uncertain in its action in the palpitations of nervous origin. The diuresis produced by the remedy is not so marked as that observed under the use of the tincture of strophanthus

or of digitalis, but is more persistent and is due not to a direct action upon the kidneys but to an increase in the cardiac force. The alkaloid does not cause gastric disturbances, except in very large and continued doses. On the contrary, it seems to increase the appetite. The alkaloid has no direct influence upon the nervous system, nor has it a cumulative action, and it can thus be given without danger of causing sudden untoward effects.

In doses of 0.0005 grm., hypodermically administered, it produces an increased energy of the cardiac beats, and cautiously employed it produces neither general nor local irritative effects. It should be employed, however, as a substitute for digitalis and the tincture of strophanthus, especially in those cases that will not tolerate the action of these drugs.

The alkaloid is contraindicated in all valvular lesions, myocarditis, Bright's disease and pleurisy. In cases of pleurisy of tubercular origin the drug proved to be entirely inefficacious. Rothziegel employs the following formula:

℞. Strophanthine . . . . . $\frac{1}{20}$—$\frac{1}{12}$ grain.
Distilled water . . . . . 2½ drachms.

Dose—Ten to twenty drops in capsules, every two hours.

Hydrogen Peroxide as a Prophylactic in Hay-Fever.

Alexander Rixa (*Therapeutic Gazette*, January 15, 1891) reports six cases in which the local application of peroxide of hydrogen prevented the appearance of hay-fever. All of the cases were of a chronic type, varying from five to nineteen years' standing. Four of them were of a simple nature, the others were complicated with bronchial catarrh and reflex asthma.

The patients, for two weeks before the onset of the disease, had the nose irrigated with a warm solution of chloride of gold four times a day. After each irrigation the nares were thoroughly sprayed with equal parts of peroxide of hydrogen and chemically pure glycerine. Three days before the expected attack, phenacetin and salol, five grains each, three times daily, were administered internally to each patient. The results were remarkable. No symptoms of the dreaded malady appeared at the expected time of onset. The treatment was continued throughout the fever season, the applications being reduced in number to once or twice a day. The internal medication was stopped after the first week.

One of the cases, however, that of a stout, heavy-set adult, presented asthmatic symptoms of a grave character at the end of the fourth week. The application of Chapman's spinal ice-bag and the exhibition of large doses of codeine during the paroxysm produced beneficial results.

OBSTETRICS.

UNDER THE CHARGE OF

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ASSISTED BY

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The Estimation of the Size of the Child's Head Before Birth.

V. Kalkowski (*Archiv f. Gyn.*, Bd. 38, H. 3) agrees with Fasbender that the child's head is in miniature a reproduction of the mother's head. He finds in 428 measurements a remarkable resemblance of the infant's to the mother's skull. So constant is the relation between the two that the child's head can be estimated before birth in the majority of cases as follows: The bi-temporal diameter is 4.5 cm. less, the bi-parietal is 5 cm. less, the sub-occipito-bregmatic diameter 5.5 cm. less than the corresponding dimensions of the mother's head. [For practical purposes there is no plan equal to abdominal and combined palpation for estimating the size of the foetal head and its relation to the pelvis. B. C. H.]

Metritis Dissecans.

H. J. Garrigues (*Archiv f. Gyn.*, Bd. 38, H. 3), adds two more to the six cases of metritis dissecans previously reported by himself, making in all 14 cases on record in medical literature. In one of these cases, on the twentieth day after labor, a piece of muscular tissue, two and three-quarters inches long and three-quarters of an inch thick in the middle, was extracted from the uterus after a long-continued fever associated with diphtheritic patches in the vagina and a foul discharge. The woman made a good recovery.

In the second case, on the thirty-sixth day, a pear-shaped body was discharged from the vagina, three inches long and one and five-eighths inches wide at the widest portion. It was folded on itself in its length. This woman also made a good recovery. The diagnosis of the nature of the tissue discharged was based on the macroscopic appearance alone, a microscopic examination not being made.

According to Garrigues, the diagnosis of metritis dissecans is easy. The most valuable diagnostic sign, he says, is the long-continued purulent discharge, with local symptoms of septic infection.

Mortality of Labor in Old Primiparæ.

The mortality of childbirth in old primiparæ has, in the past, been very high; but Erdmann (*Archiv f. Gyn.*, Bd. 39, H. 1) finds that in these aseptic days elderly primiparæ present a mortality scarcely greater than is to be found in obstetric practice in general. From a study of 535 cases, Erdmann comes to the following conclusions:

There is no distinct limit of age for elderly primiparæ, because the peculiarities of these cases may be seen early or late in different individuals.

Even in the 27th year the characteristics of labor in these cases may appear in a distinct manner.

The most important peculiarity in these cases is the inelasticity of the soft parts which increases in direct ratio with the age. There occur with increasing frequency, as the age is greater, lacerations of the perineum, and episiotomy is more often demanded.

Eclampsia increases in frequency plainly with the age of the primiparæ.

Abnormal positions of the child are more frequent as the woman becomes older. This is particularly true of pelvic presentations.

The duration of labor is greater as the age increases.

With the age increase also abnormalities of muscular action.

Operative interference is more frequently demanded as the age of the patient increases.

The mortality of the mothers in labor can be kept at a low level by strict antisepsis, and the mortality of the children can be reduced by resorting to incisions of the cervix, and even of the vagina and perineum to allow the more rapid extraction of the fœtus.

Subinvolution after delivery increases in frequency with the age. The other diseases of the puerperium, especially those of a febrile nature, do not increase with the age, a circumstance that is to be explained by the general observance of antiseptic precautions.

Labor Complicated by Irreducible Prolapse of the Uterus.

Dr. Faivre (*Nouvelles Archives d'Obstétrique et de Gynécologie*) reports a very interesting case from the service of Doléris. The patient was pregnant for the fourteenth time. There was a uterus biseptus throughout almost the entire length. The cervical segment of the uterus had acquired colossal proportions; there was complete prolapse of the anterior wall of the vagina together with the bladder. In the labor there was a reversal of the ordinary mechanism, the fœtal head escaping from the vulva before it emerged from the cervix. Finally, after delivery, the woman was cured by Alexander's operation, combined with amputation of the cervix and a double colporrhaphy.

The prolapsed cervix and lower portion of the uterus, with the vagina and the bladder, formed a tumor which measured, as labor began, 45 cm. in circumference, and projected

from the genitalia 15 cm. The labor was exceedingly protracted and was finally terminated by the application of the forceps, counter-traction being made by an assistant who stood a-straddle of the patient and, hooking his fingers over the cervix, pulled it upward while the operator made traction upon the fœtal head with the instruments.

Polyuria Gravidarum.

Under this name, Voituriez (*Archiv de Tocologie*, December, 1890) describes a complication of pregnancy which he considers entirely distinct from the commonly observed causes of frequent and excessive urination in pregnant women. It is to be distinguished from the polyuria due to nephritis or diabetes associated with pregnancy, and it should not be confounded with the cystitis of pregnancy, of which Monod has described several varieties—viz., (*a*) Cystitis of early pregnancy due to the congestion of the bladder and pelvic viscera, characterized by frequent micturition, tenesmus, muco-purulent deposit and appearing as early as the fourth week in about twenty-six per cent. of pregnant women; (*b*) Cystitis, due to backward displacement of the uterus, occurring at the end of the third month, and, if not corrected, leading to retention of urine and the other serious consequences of incarceration of the gravid womb; (*c*) Cystitis appearing late in the course of gestation, due to pressure of the fœtal head after it has entered the pelvic inlet. Retention of urine is not infrequent in this variety.

The simple or pure polyuria, as Voituriez calls it, is easily distinguished from diabetic polyuria by analysis of the urine and the patient's general condition (emaciation, cachexia, etc.). In cystitis the quantity of urine voided is not very great, and although there is frequent desire to micturate, only a small amount is passed at each effort, which is accompanied by tenesmus and pain. It is altogether different in simple polyuria. The urine is frequently voided in large quantities; there is no pain during urination or in the intervals; the bladder retains its normal capacity, is capable of some distension, and the patient is relieved after each emptying of the bladder. The urine is clear, shows no deposit, and is of low specific gravity.

He does not consider this simple polyuria of pregnant women of reflex nervous origin, since it is not capricious and transient, and is not relieved by the administration of the bromide, or belladonna. He inclines to the belief that it is mechanical in origin and finds its explanation in the general pathological law, that irritation of the glands of an excretory canal produces a reflex congestion of its parenchymatous structures leading to increased activity and hypersecretion. The irritation in this instance is produced by pressure of the uterus upon the ureters.

This theory is apparently justified by the fact that simple polyuria only appears after the uterus has reached considerable size (fifth month), and is increased by the dorsal decubitus. His observation leads him to conclude that there exists a true polyuria peculiar to pregnancy, of more frequent occurrence than is generally supposed; that it can only be accurately determined by measuring the total amount of urine in twenty-four hours; that it appears usually in the latter half of pregnancy, rapidly disappears after delivery, and has no ill effect upon mother or child.

Hyperemesis Gravidarum.

Nicolaus Flaischlen (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band 20, Heft 1) reports five cases of hyperemesis gravidarum, in four of which, after other remedies failed, abortion was induced, and in one rectal alimentation was employed. There were three deaths. The case treated by nutritive enemata died suddenly in the tenth week in spite of improvement sufficient to retain liquid food given by the mouth. Two cases rapidly recovered, and two ended fatally after abortion. Autopsy revealed in one of the latter cases partial occlusion of the bowel near the sigmoid by adhesions, probably resulting from an operation performed five months before for floating kidneys. The other bled profusely after delivery, but the autopsy showed no signs of anemia as the cause of death.

After commenting on the usual treatment with morphia, opium, chloral, the bromides, cocaine, etc., rectal alimentation, the correction of uterine displacements and cervical inflammation, the use of the constant current (five or more milliampères), and COPEMAN'S plan of dilating the cervix, all of which he thinks are worthy of a trial, he gives the following indications for terminating the pregnancy in these aggravated cases, and argues against too great delay: When the patient can no longer retain food by the mouth and presents a progressive diminution in the daily amount of urine with more or less albumen; progressive and extreme emaciation; a dry, brown tongue; severe headache; rapid and small pulse.

The rapid loss of strength and weight, which becomes alarming, and even fatal, in a few weeks, and the grave cardiac depression in an individual recently strong and robust, show how serious the disease is, and clearly indicate a prompt treatment. He considers the condition of the pulse the most important factor in the prognosis, and the best guide in concluding whether delay is justifiable. In cases when the vomiting improves after the pregnancy has been terminated, and yet death finally occurs, he believes death results from the cardiac depression dependent upon reflex nervous disturbance, or upon nutritive changes in the heart muscle. One of his fatal cases was of this character. Delay is, therefore, justifiable only so long as the pulse is not rapid and feeble. As an elevated temperature is not always present, its absence does not warrant delay. He believes that many patients die after the induction of abortion because the operation is performed too late.

INTRA-UTERINE TAMPON FOR POST-PARTUM HEMORRHAGE.

AUVARD (*Archiv de Tocologie*, December, 1890) considers DUEHRSEN'S plan of treating post-partum hemorrhage by an intra-uterine tampon of iodoform gauze a safe and reliable treatment. He finds the mortality in sixty-seven cases about six per cent.

The method of applying the tampon is as follows: The anterior and posterior lips of the cervix are transfixed and drawn downward with tenacula, and a strip of iodoform gauze carried by means of dressing forceps to the fundus. The other hand is placed on the fundus through the abdominal wall, while the cavity of the uterus is being filled with the gauze. The tenacula are removed, and the end of the gauze is left at the vulvar opening. The tampon should be removed in from twelve to twenty-four hours. He considers two grades of post-partum hemorrhage—viz., bleeding of moderate severity, and hemorrhage—alarmingly profuse.

In the former variety the loss of blood may be due to uterine inertia, wounds of the vulva, vagina or cervix; and the treatment of these milder cases should include, besides ligatures and sutures, antiseptic injections of hot water, the administration of ergot and the application of the utero-vaginal tampon. When the loss of blood is alarming, uterine inertia is the cause. The bleeding should be controlled by compression and massage of the uterus through the abdominal wall, by the introduction of the hand into the uterus to remove its contents, followed by the utero-vaginal tampon.

TUMORS COMPLICATING PREGNANCY.

M. GÖRDES (*Zeitschrift für Geburt. und Gynäkologie*, Band 20, Heft 1), reports sixteen cases of laparotomy upon pregnant women for the removal of abdominal tumors. As an indication of the infrequency of new growths complicating pregnancy, he quotes the statistics of Martin's Hospital for eighteen months—three hundred and thirty laparotomies, of which only four per cent., including ectopic pregnancies, were upon pregnant women.

The sixteen cases reported were met with at Martin's Hospital during the last ten years. They do not include extra-uterine pregnancies, of which there were thirty. Of the sixteen cases there were: three ovarian and tubal tumors, one abscess of left broad ligament, one intra-ligamentary multilocular cyst, one carcinoma of omentum, one right-sided hydronephrosis, nine fibroid tumors. Fifty per cent. occurred on the left side, less than twenty-five per cent. on the right, and the remainder on both sides. He refers to this predisposition to the

left side of other pathological conditions of the female genitalia. Of fourteen ectopic cysts seventy-five per cent. were on the left side. Inflammation of the tubes and ovaries he also finds more frequent on the left side, but pathological changes in the kidneys of women—particularly tumors and floating kidney—more frequent on the right side.

Of all pelvic tumors complicating pregnancy he considers ovarian the least difficult to diagnosticate, the only obstacle arising when their walls are rigid and adherent to the uterus. Under such conditions they simulate myomata.

Before deciding upon a plan of treatment, *i.e.*, whether abortion should be induced, laparotomy performed, or expectancy followed, he thinks it is necessary to determine the situation of the tumor, its origin, relation to neighboring organs and character of the growth. When these are favorable operative interference is not indicated. Induction of abortion is not justifiable so long as the connection between tumor and uterus is not certainly known. On the other hand the rapid growth of fibroids during pregnancy, their increased dangers during the puerperium, the possibility of the tumor being malignant or growing to such a size as to obstruct labor should be borne in mind when expectancy is decided upon.

He believes that tubal and ovarian tumors should be removed unless there are contra-indications, such as extensive adhesion to the uterus. Spontaneous abortion and a less favorable puerperium caused by the presence of the tumor are prevented by its removal. He operated on three cases of ovarian tumor without interrupting the course of gestation.

Myomata complicating pregnancy are rare. They usually prevent conception, particularly the submucous and interstitial varieties, and are apt to cause abortion. Operative interference, therefore, should, in his opinion, be more readily resorted to since the pregnancy will likely be interrupted by the tumor. The dangers of inducing abortion in these cases are profuse hemorrhage, especially when the placenta is situated at the base of the tumor or when its rigidity prevents the uterus from contracting, and finally the dangers incident to the destructive changes during the puerperium.

The method of procedure when laparotomy is employed depends upon the tumor's location, which often cannot be decided until the abdomen is opened.

Myomata in the upper uterine segment are not so prone to interfere with labor. The subserous variety is generally less difficult to remove and abortion not so likely to follow, particularly if the tumor is pedunculated. Abortion is very apt to ensue if the base of the tumor is broad, as happened in two of his cases. His rule is, operate when the growth is pedunculated; when sessile, non-interference so long as there is no compression of the uterus or adnexa. He believes a diagnosis between non-pedunculated, subserous and interstitial tumors is impossible, and considers the danger of abortion from operation the same in each.

Of two cases of subserous and interstitial fibroids removed by enucleation, abortion, collapse and death occurred four days after operation in one; in the other, abortion and recovery occurred two weeks after the operation. In these two cases it was possible to remove the greater part of the tumors, but when the entire organ is myomatous, supra-vaginal hysterectomy is preferable. The latter was done twice with fatal result, once successfully. When the patient's symptoms are not urgent and one can wait, he thinks Cæsarian section may be performed. If all the tumor can be removed at this time, the Sänger operation is to be preferred. The Porro is indicated when this cannot be done and when a subsequent pregnancy is feared.

When pregnancy is complicated by a malignant tumor, his observation leads him to conclude that it should be removed if possible, regardless of the fœtus. Martin performed Schroeder's operation in a case of carcinoma of the cervix, but after the autopsy decided that total extirpation would promise better results. In one case of carcinoma of omentum, thought to be an ovarian tumor, laparotomy was performed, but removal of the growth was impossible. Five months later the patient aborted, and her condition at once improved. Gördes believes that in such cases the best plan is to induce premature labor and as soon after as possible remove the growth by abdominal section. Two cases of intra-ligamentary tumors were observed. One was removed without producing abortion. The other was adherent to the uterus, and for that reason hysterectomy performed, with recovery. The sixteenth case was hydronephrosis on the right side. The tumor was removed, with recovery without abortion.

GYNECOLOGY.

UNDER THE CHARGE OF

WILLIAM GOODELL, M.D.

ASSISTED BY

WILLIAM L. TAYLOR, M.D., AND J. M. BALDY, M.D.

Lysol in Gynecology.

Michelsen (*Centralbl. f. Gynäkologie* January 3, 1891), Schottelius, Engler and Simmonds have found experimentally that lysol is in many respects superior to all known antiseptic drugs; not the least of its advantages rests upon the facts that it is readily and permanently soluble in water, and that it will destroy bacteria of all kinds with certainty and safety.

Michelsen has found in his practice that the expectation aroused by these experimental investigations has been wholly fulfilled. At first he used the drug in the form of a one per cent. solution as a wash for his hands and instruments. On trial it soon became evident that it could be substituted as an antiseptic for corrosive sublimate, carbolic acid or iodoform, wherever these drugs were used; it is just as reliable and has none of the dangers incident to the use of these remedies.

In twenty-eight cases of colporrhaphy, vesico-vaginal fistulæ and prolapse operations, union was obtained by first intention in all, and the sutures were removed in from eight to ten days. Severe bleeding after curetting the uterus was markedly diminished, after the use of a five per cent. solution.

In a series of forty-two minor operations there was in no case a rise of temperature or other sign of infection.

By immersing catgut in a five per cent. solution for two hours it was rendered as hard and resistant as if it had been treated by alcohol or oil of juniper.

Five days after curetting a carcinomatous cervix and tamponing the wound with gauze dipped in a five per cent. solution, there was no odor, other than the slight smell of creosote, which is natural to lysol. Granulation of open wounds following its use is remarkably rapid.

In laparotomies a one per cent. solution should be used for everything excepting for irrigating the peritoneal cavity; for this purpose a 0.3 per cent. solution is sufficiently strong. In twelve cases of laparotomy, primary union of the incision was obtained in every case, and the patients were able to return to their homes in twenty days. No toxic effects were observed in any of these cases. The urine was unaltered in quantity or constitution.

The same advantages in the use of this drug have been noticed also in obstetrical practice; here a 0.3 per cent. solution should be used. Not the least of the advantages of lysol is its cheapness.

The disadvantages of the drug are that its use renders instruments, ligatures and hands very slippery; that it gives a slight burning sensation to the skin and mucous membranes, and renders the sense of touch in the fingers less acute. If instruments remain long immersed in the solution they become rough.

Removal of the Uterus for Cancer.

Thomas Keith (*British Med. Journal*, January 10, 1891) reports the case of a woman whose uterus he removed six months ago for epithelial disease of the cervix extending into the cavity of the uterus. The patient returned home the twentieth day after the operation, and is still free from any return of the disease.

The first time he performed vaginal hysterectomy for cancer was in 1881, and the patient is yet in the best of health. The same principles in operating guide him now as then. The uterus is drawn down, the incisions are made with scissors, going as wide of the

disease as the bladder and ureters will permit, all bleeding and oozing are stopped, and the wound is closed by uniting the edges with horse-hair sutures. Drainage is not considered necessary. The broad ligaments are tied in small portions; silk being used at the upper and firmer part of the ligament, and catgut at the lower part. Keith has never lost a patient following this operation. The use of clamp-forceps does not commend itself to him as good surgery; nor does he consider the use of the cautery safe.

The total removal of the uterus for malignant disease must, as a rule, be a better operation than the partial removal of the organ. No modern surgeon thinks of removing a bit of a cancerous breast. There may be cancerous nests in the very fundus, even though the disease may seem to the eye to be quite local.

In amputation of the cervix he has again and again opened into the peritoneal cavity, though he has not seen any harm arise from this. He has a patient still living in whom this accident happened ten years ago.

By early operation, results not inferior to operations for cancers in other parts of the body will be obtained.

Transperitoneal Hysterorrhaphy.

Florian Krug (*N. Y. Med. Jour.*, January 3, 1891) thinks the great number of operations in existence for the cure of posterior displacements of the uterus are indications that none of them are fully satisfactory. He has adopted a method of his own which is applicable only to the freely movable uterus, retrodisplaced or descended, without accompanying disease of the appendages.

The patient is placed in Trendelenburg's posture. A sound is introduced into the uterus and a catheter into the bladder. An assistant holds the uterus forward against the abdominal wall, a little above the symphysis, while the abdominal tissues are divided down to the peritoneum. By moving the sound and catheter alternately, the bladder can be located and avoided. A needle (made especially for this purpose) is passed entirely through the abdominal walls, about a quarter of an inch from the edge of the incision. After the needle has entered the abdominal cavity, its cutting edge is used to denude about a square inch on the anterior surface of the uterus. The needle is then passed through the body of the uterus, coming out at a place corresponding with the point of entrance. Two such sutures are introduced, and when tied they close the wound. He reports six cases.

Treatment of Salpingitis.

Alexander Rizkallah (*Centralbl. f. Gynäkologie*, January 3, 1891), writing upon the treatment of salpingitis, comes to the following conclusions:

1. That the treatment of salpingitis must differ in accordance with the variety of the disease.

2. Salpingectomy is not the only remedy. This operation is indicated in cases of undoubted old pyosalpinx, large hæmatosalpinx and tubercular salpingitis, as soon as these conditions are diagnosticated.

3. In cases of catarrhal salpingitis, salpingectomy is an unnecessary mutilation.

4. In these cases the uterus should be curetted and injected with iodine after the method of Pozzi; in all fresh cases of pyosalpinx and slight cases of hæmatosalpinx this method is to be given a trial.

5. If the catarrhal form is associated with intolerable pain, due to cystic degeneration or pathological fixation of the ovaries, laparotomy must be considered.

Massage in Gynecology.

Julius Dollinger (*Centralbl. f. Gynäkologie*, January 3, 1891) states that under massage in gynecology may be classed either the local treatment of the genitalia, or medical gymnastics. Cases of prolapsus uteri and retroflexion are not suitable for the application of the

Brandt method, but for stretching and breaking up adhesions massage may be cautiously practised.

The method does not simplify therapeutics, as the indications are very limited and the application is difficult and must be long continued; but in suitable cases it is successful. Practice is necessary in order to obtain good results.

Tinctura Hæmostyptica.

Fritsch (*Therapeut. Monatshefte*, January, 1891) states that in common with all gynecologists he uses ergot frequently in his gynecological work. In obstetrical practice he rarely has occasion to employ it. For a long time he gave the drug in pill form as follows:

℞. Powder of ergot . . . . . 80 grains.
Tragacanth . . . . . q. s.
Make 60 pills.
Take ten pills daily.

In practice among poor patients this is a desirable formula on account of its cheapness. For more prompt action he uses the following prescription:

℞. Powdered ergot . . . . . 10 drachms.
Alcohol . . . . . 20 drachms.
Sulphuric acid . . . . . 2 drachms.
Warm water . . . . . 4 pints.
Digest to . . . . . 1½ pints.
Filter and add syrup of cinnamon . . . . . 4 ounces.
Take two tablespoonfuls three times daily.

This preparation of ergot, though very effective, will disagree with the stomach and cannot be taken continuously.

Fritsch then advises the use of Denzel's ergotine in the following combination:

℞. Ergotine (Denzel) } of each . . . . . 80 grains.
Powdered ergot }
Make 100 pills.
Take six pills daily.

In this way ergot may be given with excellent effect for a long while.

In cases of menorrhagia the following is advised:

℞. Dried extract of hydrastis canadensis }
Dried extract of gossypium } of each . . . . . 80 grains.
Ergotine (Denzel) }
Make 100 pills.
Take three pills three times a day.

In the form of suppositories ergot seems to be of little value.

A tincture may be made on the plan of the decoction given above, of such strength that one drachm will contain eight grains of ergot. Of this two tablespoonfuls may be given daily. Fritsch calls this *tinctura hæmostyptica.*

This tincture is very effective, especially in menorrhagia after labor, at the climacteric and in profuse menstruation of the very young. This remedy should always be tried before any operative measures are undertaken for the relief of menorrhagia.

Sarcomas of the Uterus and Their Surgical Treatment.

Terrillon (*Bulletin Gén. de Méd.*, December 15, 1890) calls attention to the difficulty in diagnosing sarcoma of the uterus. In the beginning the condition is very apt to be mistaken for hemorrhagic metritis; and, as it advances to the formation of a positive tumor, it may be mistaken for a fibroid or a cyst.

There are two seats of preference for these growths—one in the mucosa, and the other

in the walls or muscular structure of the uterus. A signal characteristic is freedom from involvement of the neck, at least for a considerable length of time.

In sarcoma of the mucous lining two forms may be met—one in which the disease takes upon itself a pediculated character, and another in which there is ulceration. In both conditions there will be hypertrophy of the uterus, with enlarged cavity.

The interstitial variety may be divided into two classes: (1) Those in which the sarcoma infiltrates the muscular structure; the appearance of muscular fibres in the mass seeming to justify the possibility of muscular degeneration. (2) Those in which the disease is localized, starting as a nodule, growing into the serous cavity, and ultimately becoming pediculated, and taking on a mushroom shape. There may be a third form—namely, cystic sarcoma. The cysts may be disseminated through the tumor and may be filled with a bloody fluid, in which are found shreds of sarcomatous tissue.

Sarcoma of the uterus is most apt to occur between the ages of thirty and fifty; when the disease involves the ovaries it is commonly observed between the fifteenth and twenty-fifth year. Sterility appears to be a predisposing cause or condition. An important point in diagnosis is the rapidity of growth, the general health remaining excellent until the sarcoma has attained considerable volume. Patients rarely live more than two years from the early appearance of the tumor, the fatal ending being due frequently to compression of the pelvic tissues

Upon removal the growth reappears, generally in from six months to two years. Sometimes it is the stump of the original tumor which is the seat of the new growth, or it may start in other tissues. Hard sarcomas of slow development are not so apt to return quickly.

Important diagnostic points are: An abundant bleeding, increase in the volume of the uterus and enlargement of the cavity, especially when appearing in a woman at the menopause. In the interstitial variety the local condition is analogous to that of fibroma, but the rapidity of growth will indicate the presence of sarcoma.

In the treatment of this disease in a general way there is only one rational procedure, and that is total ablation, in small uteri by the vagina, or, when larger, by abdominal section.

When the radical operation is not practicable in intra-uterine sarcomas, much benefit may be obtained by dilatation and scraping, and cauterization of the surface. In simple metritis, after curetting, there is no rise in temperature, but in sarcoma there is frequently quite an elevation for one or two days, due to auto-infection by products contained in the cavity of the uterus and in the sarcoma itself.

Amputation of Fibrous Bodies of the Uterus.

Audry (*Lyon Médical*, January 4, 1891) believes that in the removal of these bodies two necessary obligations are to be fulfilled: (1) An absolute hæmostasis; (2) An irreproachable asepsis.

The technique of Prof. Laroynnes's operation for the removal of intra-uterine fibroids, where the pedicle is voluminous consists in making a circular incision of the mucous covering near, but not at the base, or uterine end of the pedicle, dissecting this covering up to the base, and, after the removal of the tumor, carefully suturing this dissected membrane so as to cover in the surface left. This would also be applicable to sessile intra-uterine fibroids, using the circular incision instead of the axial incision of Martin.

Diagnosis and Treatment of Metrorrhagia.

In a paper (read before the British Gynecological Society), Edis (*British Gyn. Journal* November, 1890) lays special stress upon the exclusion of constitutional conditions in the diagnosis of uterine hemorrhage. Such conditions may arise from heart, liver and kidney disturbance, especially in the menorrhagic chlorosis of young girls and in climacteric floodings. Among the various local causes of metrorrhagia he considers one of the most fre-

quent to be retained products from incomplete abortion, and refers to a dual cause often producing bleeding which is obstinate and excessive, owing to its added character. This he exemplifies by a villous degeneration of the endometrium added to a previously existing intra-mural fibroid.

The treatment of metrorrhagia, or menorrhagia, is divided into the constitutional and local. The constitutional condition requires the administration of cardiac sedatives, cholagogues, diaphoretics and purgatives; and in menorrhagic chlorosis, potassium bromide during the periods, and iron and strychnia between them.

Where local cause exists, he advises immediate exploration and removal of cause, avoiding tampons. Where there is retained placental tissue the curette must at once be used if there is severe hemorrhage or offensive discharge.

Of the few reliable remedies to check uterine hemorrhage, ergót, hydrastis canadensis and hamamelis are the most efficient, with quinine and strychnia in systemic depression, and digitalis and iron in heart cases, and in myoma. The use of ergot is always to be avoided when there is any foreign body in the uterine cavity.

In the discussion which followed the reading of this paper, FANCOURT BARNES spoke of retained placental tissue as a frequent cause of uterine hemorrhage, and advised removal, using the finger as the safest curette, followed by a thorough application of a solution of iodine.

HUGH FENTON suggested electricity, the continuous current, in obstinate cases.

HEYWOOD SMITH advised the application of the solid nitrate of silver, after curetting for retained membranes, and spoke of a case in which, in the treatment of a fibroid, the continuous current had started a hemorrhage.

INGLIS PARSONS favored hot douches where no cause for hemorrhage could be found. The positive electrode he considered superior to ordinary caustics.

BANTOCK laid stress upon the use of saline aperients, and iron and ergot in younger subjects. In cases where there was retained placenta and pyæmia developing, he advised the administration of muriate of iron every two or three hours. He spoke of large doses of ergot frequently increasing hemorrhage when ten minim doses diminished it.

MISCELLANEOUS.

THE TEACHING OF CLINICAL SURGERY AT THE UNIVERSITY OF PENNSYLVANIA.

UNDER the direction and constant supervision of Professor J. William White, the Department of Clinical Surgery has been so organized and arranged that it affords the greatest practical advantages to the medical students of the University. A special amphitheatre with an etherizing-room, a dressing-room and a waiting-room for patients has been set aside for this department. The material for teaching comes not only from the wards and from the regular hospital service, but is drawn from the orthopædic, venereal and out-patient surgical departments, and during the last winter there has been a steadily increasing supply of interesting cases sent or brought by University graduates.

The patients for each day's clinic are received in the waiting-room at the back of the amphitheatre, are examined, and those who require operation are given in charge of the nurses, by whom they are placed on the rolling tables. The one selected as most suitable for the first operation is run into the etherizing-room at the side of the operating floor. Here are placed, convenient to the hand, ether, inhalers, a hypodermic syringe, with bottles containing remedies appropriate for accidents which may occur during anæsthetization, and a powerful Faradic battery, to which is attached an electric brush. A student is now called down from the benches and, under the supervision of the official anæsthetizer, Dr. A. C. Wood, proceeds to give ether, noting, on a blank provided for the purpose, the amount given, the time the patient is under ether, the pulse and temperature before and after operation, and other points essential to a complete record of this part of the work.

In the meantime Dr. White has brought before the class an interesting case for diagnosis, has called down one of the students and is teaching him, by questions, how to examine such a case and how to arrive at a correct conclusion.

The first patient being fully under ether, a third member of the class is called down to assist in the operation, if it be a grave one, or to perform it himself, assisted by Dr. White, if it be comparatively simple. The student removes his coat, rolls up his sleeves and cleanses his hands according to modern antiseptic methods. He then proceeds to clean the operation-area and surround it by bichloride-towels, after which the operation is performed.

The case is now sent into the dressing-room at the other side of the operating floor, where the student, under the direction of Dr. Edward Martin or Dr. John Shober or the resident surgeon, closes and drains the wound and applies the dressings. When the patient comes out of ether, the student who operated or assisted is required to write a history of the case, keeping it under observation, if possible, till complete cure and reporting all pathological findings. Test tubes, containing nutrient gelatine, and a Zeiss microscope, are kept on the operating floor, so that where it is indicated cultures may be made, or the diagnosis may be cleared up by a microscopic examination. If the case is one requiring ether, a specimen of the urine is obtained, and a student is called down to examine this. At one side of the waiting-room there is a recess in which are placed a clinical microscope and all the materials required for urinalysis. A carefully written report is made of the condition of the urine, and this is filed together with the history.

Before one case is completed a student is called down to begin ether on the next, so that as one patient is wheeled into the dressing-room another is ready to bring before the class. Or, if this is not the case, a stricture patient, for instance, will be placed on the table, and, in regular turn, the students will be called down to pass sounds till everything is prepared for the next operation.

In this way students get a practical insight into etherization, antiseptic preparation and operative manipulation, impossible to obtain by any amount of didactic lecturing or demonstration on the part of the teacher. What they have done with their hands they do not forget; the experiences of their comrades are deeply impressed upon them, and that they appreciate the effort made in their

behalf is shown not only by their attendance at times when they are not required to be present, but by the intelligent and thorough way in which they apply the teachings of the Clinical Department when they are called in turn to etherize, operate, assist or to examine pathological specimens.

CORRESPONDENCE.

"AMETROPIC CHLOROIDO-RETINITIS."

PHILADELPHIA, February 3d, 1891.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE.

GENTLEMEN:—A communication from Dr. Gould in your last issue is another of the frequent surprises which meet graduates of the University, in finding points of importance brought forward as new and original, which they had supposed that every student knew before graduation, since they themselves cut their teeth on them in their early medical infancy. Thus Dr. Strawbridge taught in 1877 (and perhaps long before) that the larynx should be watched in making the Politzer inflation, since its rise in the act of swallowing gave the true signal for compressing the bag. This was recently re-discovered by a Vienna man and indorsed by Politzer as new and admirable, although many a University graduate has been doing it for years, as a matter of course, in Politzer's clinic.

So, too, in ophthalmology, "flannel-red choroids," "nerve-margins veiled and choroids woolly," "tortuosity of the vessels with slight retinal haze," "absorption of pigment with heaping in the choroidal interspaces," "granular changes at the macula," have always been such every-day records as the results of eye-strain, in the Eye Dispensary, that only cases of marked neuro-retinitis, such as have also been reported by Nettleship (*Ophth. Hosp. Reports*, 1876), or similar extreme conditions, attracted any especial attention. Dr. Norris, in his lectures, constantly referred to such results of strain from refraction-errors (*e. g.*, *Phila. Med. Times*, June 9th, 1874), and dwells upon them in his writings, such as "Asthenopia and the Change in Refraction of Adolescent and Adult Eyes" (*Trans. American Ophth. Soc.*, 1886). Of course, such studies have been conducted elsewhere also, as witness, among many others, Green's papers, "Astigmatism and Myopia" (*Am. Jour. Med. Sciences*, 1867), and Thomson's writings on "Drag," etc.

In Dr. Risley's papers on the mydriatics (*Am. Jour. Med. Sciences*, April, 1880, and January, 1881; *Trans. American Ophth. Soc.*, 1881), this occurrence of retino-choroidal irritation as the result of ametropia is again and again cited as a frequent reason for using a mydriatic—the only question being, as in Dr.

de Schweinitz's remarks, quoted by your correspondent, which mydriatic best subdues it. In his "Weak Eyes in the Public Schools of Philadelphia" (*Phila. Med. Times* and *Trans. Penna. State Med. Soc.*, 1881), Dr. Risley deals at some length with the question in its manifold bearings; and in my "Study of the Eyes of Medical Students" (*Trans. Penna. State Med. Soc.*, 1885), the frequency of such conditions is touched upon, and in seventeen cases of the ninety examined, they are noted as marked and serious. So much a matter of course to us is all this, that the writer upon "Ophthalmoscopy" in Keating's System—who had written of "The Eye of the Adult Imbecile," "No changes in the choroid except a somewhat granular condition, more pronounced in the macular region; this sometimes being accompanied by a slight absorption of epithelium (especially amongst the most intelligent)"—has naturally considered it enough to sum it up in the statement, "Ametropia as found in abused and stretching eyes may give all the evidences of low choroiditis with retinal disturbances, and even optic nerve swelling, without any subjective acknowledgement of the intra-ocular condition."

As to the changes at the macula, these have been long and frequently studied; and most of us could cite, like Dr. de Schweinitz (*Jour. Am. Med. Assoc.*, Oct. 18, 1890), dozens of instances, with as well as without central scotoma, relative or absolute. That ametropia is almost invariably present with them, probably depends in part upon the fact that emmetropia is not met as often in Philadelphia as in some other cities. It is only what Donders taught us: "The most important change beyond the seat of the original atrophy is the degeneration in the region of the yellow spot, especially when it occupies the fovea centralis. It is true this may occur at any age, even in non-myopic eyes; and on localized disturbance of the function in the same place, with or without perceptible organic change, a number of cases of ordinary amblyopia depend." (Accommodation and Refraction, p. 364.)

The nature and causation of these lesions often lack any satisfactory explanation, in spite of the illumination shed upon the subject by the paper on "Ametropic Choroido-retinitis;" for the theory there advanced ill-applies to the numerous cases where the changes are on the side of lower ametropia, where the vision is normal in spite of well-marked lesions, or where the scotoma is present in young eyes, without any abnormality visible to the most scrupulous study. Peltesohn mourns (*Centralbl.*, Nov., 1888) that the ophthalmoscope is not used as a routine matter by oculists, and others, that the macula is not habitually studied. There doubtless is much slighting done, but it seems gratuitous to assume that visible macular lesions have been overlooked or neglected by Martin, as they certainly have not been by those who have read and weighed each attempt to solve these mysteries of amblyopia, even while they found something to smile at in such theories as that of amblyopia in one meridian of the retinal elements.

Very respectfully yours,

B. Alexander Randall, M.D.

SUPPLEMENT.

WORK OF THE UNIVERSITY TUBERCULOSIS COMMISSION.

THE following pages contain a summary of the general clinical observations, results of the physical examination of the lungs, the pulse during the reaction following the injection of Koch's remedy, and the examinations of the blood and urine. Manifestly it would be impossible to give the daily records of the searching study to which each case has been subjected, and hence the articles appear in the form of a general *résumé*, with a few illustrative cases.

GENERAL CLINICAL OBSERVATIONS.

BY JOHN H. MUSSER, M.D.,

Assistant Professor of Clinical Medicine, University of Pennsylvania.

THERE have been 14 cases of phthisis, in various stages, under treatment by direction of the Commission in the Medical Ward of the University Hospital. Since the commencement of the treatment by the use of Koch's remedy three other cases were treated a short time. Two were females, one of whom, on account of personal reasons, returned to her home after a week. The other was a case of advanced phthisis, and was advised to return home, as no prospects of improvement could be held out to her. Her case will be referred to again. The third case will also be referred to again, and is only mentioned now to totalize the cases. Of the 14 cases, 4 were females and 10 males. They were all adults.

The cases that have been under treatment since the last week in December represent various stages of phthisis. It was the determination of the Commission to select only cases of incipient phthisis, or those which exhibited such good general health and strength as to warrant the tentative use of the remedy. The latter was decided upon, especially as so many cases demanding the attention of the Commission presented themselves who had full knowledge that the treatment was only experimental. The patients realized that they were seriously ill and had nothing to anticipate but a period of suffering and more or less rapid gradual decline. Under these circumstances they voluntarily submitted to the application of the remedy in the dosage and methods seen fit by the Commission.

Ten cases have been treated for upward of five weeks in the men's ward. In four the process was localized and in the early stages. In three more the disease was considerably advanced; but the long duration and the good general

condition of the patients showed a tendency to repair. Three were advancing cases, cavities having formed and the tubercular infiltration being more or less general in the lungs. One woman, on whom observation will be made again, represented a long-standing case in which the progress, though slow, was continuously downward. The disease had invaded to a limited extent both lungs.

Method of Treatment.—The general directions laid down by Koch were followed as strictly as possible. The injections were given in the situation advised by Koch, proper antiseptic precautions being used.

During the first ten days of treatment all the patients were kept continuously in bed. It was found soon that this was unnecessary, and they were only put to bed when reaction was experienced. The patients were given the hospital diet that private patients receive. It is better than the usual ward diet of hospitals, so that, as far as food is concerned, the best was offered; a large, well-ventilated and light ward was used for their accommodation. The depressing influence of hospital life could not be removed, but confidence and hope were stimulants which to an extent counteracted this.

Dose of Remedy.—The initial dose in every case was 1 mgrm. The first ten days, in the cases of early phthisis, and patients whose general condition was good, the injection was given daily, the dose being increased 1 mgrm. each day. After 8 or 10 mgrms. were reached, if there had not been excessive reactions, the dose was further increased, but was given only every second or third day, the interval depending upon the severity of reaction.

Two different supplies of the remedy were used; the first supply was from a portion of a flask divided between the Johns Hopkins Hospital and the Laboratory of the Army Medical Museum. The second supply came directly to the Commission, and is still in use. The remedy was prepared for injection by Dr. Marshall, who diluted it in accordance with Koch's directions with a 1 per cent. carbolic acid solution; the dilution was usually prepared every day, although occasionally a portion remaining from the preceding day was used; this seemed as effective as the freshly prepared carbolic solution. Two or three times the original lymph, diluted with boiled water, was used. The effect was not different from that noted when the carbolic solution was used.

After a dosage of 10 mgrms. was reached it was continued at this strength in two instances, was increased to 15 mgrms. in three more instances, and in the remaining male cases was run up to from 18 to 22 mgrms. The latter was the highest dosage reached.

General Observation of the Effects.

Local Effects.—In the first ten days of treatment, particularly as the injection was given each day, the patients experienced some local pain and tenderness, which in some interfered with comfortable position for twelve hours, when in the recumbent posture, and in others remained as a tender area for twenty-four hours. At the end of twenty-four hours all evidences of local irritation disappeared. In one case the pain and swelling were sufficient to cause an application of lead water and laudanum to be made.

General Effects.—Without specifying cases, it may be said that in general

the symptoms known as the usual reaction-symptoms, so fully described by Koch, were secured. The reactions, however, were strikingly slight, particularly in he male cases, and were not noticed until six or eight mgrms. of the remedy were used. Even after this no severe or alarming general symptoms arose.

In the more marked cases of general reaction the temperature did not rise above 103° F. The acme was reached gradually about twelve hours after the injection. Usually the temperature rose within the first twenty-four hours. In one case it did not take place until the subsequent twenty-four hours. In a few of the cases, after the point of reaction had been attained, the fever did not abate for a much longer time than is usually expected, or rather a recurrence of reaction-symptoms took place for two or three days subsequent to the injection, the temperature rising nearly to the height of the original reaction the second day, the third day not so high, and the fourth day reaching the normal. The patients did not experience any marked discomfort on account of the fever. In one case of advancing phthisis, the hectic of the disease abated after the reaction fever had subsided, so that an evening rise to only 101°, instead of 103°, took place for three days subsequent to the reaction.

A slight erythema occurred in one case similar to the rash described by others. In nearly all the cases headache was experienced, but one patient only complained of backache. In many general joint pains and muscular soreness were present.

In two cases vomiting occurred at the time the fever was at its height. Other gastro-intestinal symptoms were not observed.

The patients did not experience much discomfort, and certainly none of them were depressed in any way.

One patient, in whom reaction was not secured until fourteen mgrms. of the remedy were given, had a swelling of the left cervical glands. This lasted twenty-four hours, and was accompanied with pain and tenderness. It recurred slightly with the next injection, but since then entirely disappeared. At the time of reaction some of the patients experienced some constriction about the chest, or oppressed breathing; others suffered from chest pains. In nearly all the cases the cough was increased at the time of reaction, and for from twelve to twenty-four hours afterward. This increase in cough was usually attended by an increase in the amount of expectoration. The cough, however, was less painful or difficult and the expectoration more free. After the period of reaction the cough lessened, and in many of the cases expectoration diminished.

As an instance of one of the cases which seemed to be favorably affected by the remedy, the following may be taken:

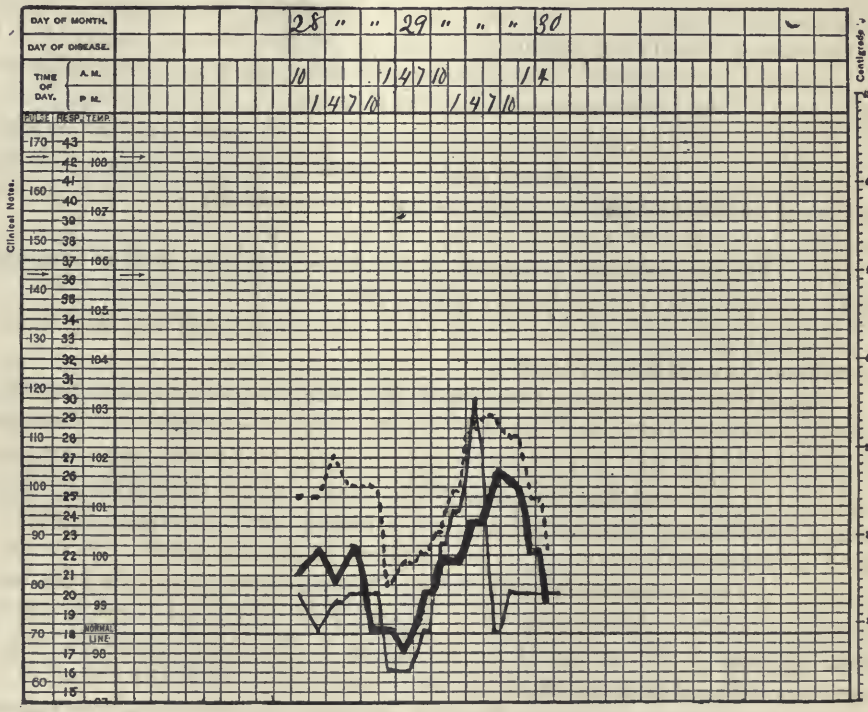
CASE VI.—H., admitted December 21, 1890, aged 30, white, passenger agent, resident of Central Pennsylvania, married. Had specific diseases of childhood; in good health until four years ago, when he had an attack of malaria of six weeks' duration; temperate; no venereal disease; family history good. January, 1890, had influenza; February, had pleurisy of right side; improved in health until July 18, when slight hemorrhage from lungs occurred, followed by slight expectoration and a little cough, pain in the chest and, on exertion, dyspnœa. He improved. September 12, cough having returned with expectoration, he had a hemorrhage of about one ounce. Two weeks before admission cough became tight and

continuous, and two days afterward had another hemorrhage, with pain in the middle of the chest, but no dyspnœa. Had occasional night sweats; lost ten pounds in weight.

PHYSICAL EXAMINATION (see Case VI of Dr. Griffith's Series).

Injections began December 23. First dose 1 mgrm. They were continued until January 26. Twenty injections were given. At first the injections were given daily, increasing 1 mgrm. each day until 12 mgrms. were reached. They were then given every other day, and the largest dose administered was 22 mgrms., the last day of the treatment. No marked local irritation was set up by the injections. After the third and fifth injections some pain continued for a few hours, but after that no other symptoms were complained of.

TEMPERATURE.—During the three days before the injection, temperature ranged between 98° in the morning to 100⅖° in the evening. It had been taken every three hours. No effect was seen. After the first injection it rose to 101°, falling rapidly two points lower than it had been any morning before. From the 24th to the 29th, daily injections having been given in the morning, there was always an evening rise to 102⅖° and 100⅘° and 101°, followed by a more decided fall than on days in which no injection was given, the difference between morning and evening being about 1½° to 2°.



Case VI.—Sixth injection (.008) Dec. 29, 8 A.M. Reaction in eleven hours. The temperature of 100° on the 28th is explained by the patients having received .006 on Dec. 27.

On the 28th, 8 mgrms. were given at 8.30 A.M.; at 4 P.M., temperature 101$\frac{6}{10}$°; by 4 A.M. next morning, 99°. The same dose at the same hour did not affect temperature until 10 in the evening, when it began to fall, and at 4 A.M. was 97. The same dose was again administered without any particular effect. Evening rise only to 100°.

From this time on the temperature did not rise higher than 100⅕° in the evening, although injections were given as above indicated until January 7, when 15 mgrms. were administered at 7 A.M. At 10 P.M. temperature was 101°. Again with the same dose, or increased to 22 mgrms., the evening temperature did not rise above 100°, except three times, until discharge from the hospital.

No marked temperature rise, therefore, was seen save on the 7th of January, as already stated. The morning fall was more marked and the difference between morning and evening temperature was greater than when injections were not used, the former being as low as 97⅘° most frequently until the 19th. During the week following this there was only a difference of ⅖° to ⅘° between the morning and evening temperature. It can be said, therefore, that no marked febrile reaction took place, but that some was undoubtedly manifest; that, as a result of the injections, both morning and evening rise was much less than at the earlier period of the injections.

RESPIRATIONS.—The injections seemed more sensibly to affect the respiration than the temperature; in the hours following the injection the respiration would increase, the average range being about 20. After the injections were begun and during the time of reaction, numbered per minute, they rose to 24 and 26; when the reaction was at its height several times the respirations were as high as 30, and once rose to 34 per minute. Respiration and temperature were taken simultaneously, and at the hours when the temperature was found to be greatest the respirations were not as high as one or two hours before the highest febrile range. Thus at 7 P.M., the 29th of December, the temperature was 101⅘°, the respirations at 4 P.M. were 34. On January 7, 10 P.M., temperature was 101°, respiration 24; at 1 P.M., temperature 100°, respiration 28. During the period of reaction, chest pains were complained of, and twice there was some chest oppression.

COUGH.—When admitted, the cough was considerably worse at night. It changed remarkably during the period of treatment. After 4 mgrms. the cough and expectoration were noted to diminish; after 5 mgrms., expectoration was increased during the 24 hours; after 6 mgrms. it was diminished, and the expectoration from this time continuously lessened.

On January 11 it was noted that there was very little cough; January 14, coughed much less; 16 and 17, coughed only in the morning.

When admitted, patient expectorated one ounce and a half daily; after the third injection this was reduced to half an ounce, and on subsequent days to January 12 from half a drachm to a drachm only was expectorated in 24 hours. After this date there was no expectoration at all many of the days. On the 21st a half-drachm was expectorated. Expectoration was always muco-purulent.

Microscopic examination showed absence of yellow elastic tissue; on the 22d of December contained a few bacilli of usual form; on the 28th, bacilli present, 20 to 80 in best fields, apparently normal in shape; on the 29th, numerous bacilli of many altered shapes and sizes, 50 to 100 in best fields.

January 4, great increase in number of bacilli 75 to 125 in good fields, numerous curved and branched forms prominent; January 8, bacilli present, 10 to 20 in good fields; January 14, few bacilli; January 22, no bacilli. After this date no sputum could be collected for examination.

There was, therefore, notable diminution in cough and expectoration, and a change in the microscopical characters of the latter. The purulent matter lessened, and diminution in bacilli gradually took place. One of the days when the bacilli were most abundant the reaction was greatest—that is December 29—another day when the bacilli were in excess the reaction had not been marked.

The record shows that the pulse increased correspondingly with increase in temperature with a marked increase at times of reaction. The increase was also noted frequently when there was increase in temperature at the time reaction was expected. Just as with temperature, the pulse range the last week was more stationary than during the previous weeks. On December 29, the temperature was 101⅗°, pulse 115, reaction having taken place under the injection. On the 31st, several hours after injection, pulse was 118, the temperature rising only to 100°, however. Quite frequently this was noted. Great rise of pulse at or about time of reaction should be expected with associate rise of respiration, but not of temperature.

No marked general symptoms attended any of the reactions. At one time slight general soreness was complained of, and four or five times headache has been recorded. As, however, the doses were increased these symptoms did not become more exaggerated, but rather disappeared entirely.

The physical signs while under observation have been interesting. (See Case VI of Dr. Griffith's Series.)

Patient's spirits improved very much; he gained in weight, on admission weighing only 122 pounds; when discharged, 136¾ pounds. He improved in color, his dyspnœa disappeared entirely, and there was marked gain in strength.

The blood examination showed, on the 22d of December, 4,850,000 red, 1 white to 65; hæmoglobin, 85 per cent.

The improvement in this case was seen in improvement of the general health, lessening of cough, diminution of expectoration, the latter portions which were collected showing absence of bacilli. The area of impaired percussion resonance undoubtedly lessened, but there was no marked change in the physical signs, except disappearance of râles until the day he took cold.

RESULTS OF THE PHYSICAL EXAMINATION OF THE LUNGS.

By J. P. Crozer Griffith, M.D.,
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For the sake of brevity, nearly all reference is omitted in the following abstract to physical signs not connected with the pulmonary condition. Even here, too, the physical signs of any parts of the lungs which seemed to be normal are, as a rule, omitted.

Case I.—V.—December 19, 1890.—Clavicular fossæ on both sides a little depressed; the right side of chest moves more than left. Respiration feeble in left clavicular fossa, and its character marked by very numerous fine mucous râles, audible down to fourth rib. At right apex expiration possibly slightly prolonged, and a fine mucous click occasionally audible on deep inspiration. Nothing abnormal elsewhere in chest, either on auscultation or percussion.

December 21.—No change in the physical signs.

December 27.—Fewer râles at left apex; expiration prolonged, somewhat bronchial, and rather low-pitched.

February 1.—Percussion slightly higher-pitched and impaired, and vocal resonance increased in the left supra-clavicular fossa; a few fine mucous râles heard down as far as the third rib only. There is no distinct alteration in the quality of the respiratory murmur anywhere.

Remarks.—The râles in this patient were distinctly diminished in number during the treatment, but no other decided alteration of physical signs became evident. The detection of the bronchial character of the respiration on December 27, together with the diminution in the number of râles, was probably due to the presence of a smaller amount of secretion in the lung, and a freer access of air to it.

Case II.—S.—December 27.—Chest narrow and long; expansion fairly good; right side moves rather more than the left. Percussion in the right clavicular fossæ high-pitched and tympanitic; somewhat hyper-resonant over the rest of right side in front and in axilla. On left side it is somewhat less resonant and not quite so low-pitched. Percussion in right supra-spinous fossa high-pitched and tympanitic; in left supra-spinous fossa slightly impaired. On auscultation, cavernous in- and expiration without râles in right clavicular fossæ. At left apex breath-sounds rather harsh, with numerous fine râles as far as fourth interspace. Broncho-cavernous in- and expiration in right supra-spinous fossa, without râles; prolonged inspiration and bronchial expiration in right infra-spinous fossa.

January 9.—No alteration in the physical signs except that the expiration in the left infra-clavicular fossa is certainly bronchial.

January 22.—A low-pitched tympanitic percussion note at right apex in front, with a high-pitched wooden tympany in corresponding region on left side; high-pitched tympany in both right spinous fossæ. On auscultation cavernous in- and expiration in right clavicular fossæ without râles. Harsh inspiration, and very distinctly bronchial expiration at left apex down to third rib; and fine mucous râles as far as fourth rib. Very distinct cavernous in- and expiration in the right supra-spinous fossa; harsh inspiration and somewhat bronchial expiration, with a few râles in right infra-spinous fossa. Spleen not enlarged.

REMARKS.—The physical signs in this patient were not so good at the last examination as at the first. The evidences of cavity at the right apex were somewhat more marked, and the infiltration at the left apex was more decided.

CASE III.—H.—December 18.—Chest broad, rather short and shallow. Expansion poor, especially above; slightly greater on right side below than on left. Clavicular fossæ considerably depressed, especially on right side. Vocal fremitus increased over entire right side in front and in axilla. Right supra-spinous fossa depressed. Left chest in front is everywhere high-pitched and duller on percussion than is the right side. Posteriorly left side is impaired as far as angle of scapula, but especially in the supra-spinous fossa. Rest of chest gives normal percussion note. Inspiration harsh, with fine mucous râles; and expiration prolonged, and bronchial in the left apex as far as the second interspace. From this interspace to fourth rib in the nipple line in- and expiration amphoric and attended by metallic râles; whispered pectoriloquy. Respiration feeble with quite numerous râles in left axilla. Numerous mucous râles above and below right clavicle, but without alteration in the quality of the breathing. Some fine râles in right spinous fossæ. Bronchophony and prolonged and rather hollow expiration in left supra-spinous fossa. A few râles heard over rest of left chest behind, but no alteration in the character of respiration.

January 14.—No decided change in the results of the physical examination.

January 30.—Percussion at the left apex is somewhat tympanitic, though high-pitched; breath sounds here prolonged and somewhat cavernous, with râles and loud bronchophony. Expiration rather prolonged over the right chest in front, and bubbling râles are present over this side behind. Prolonged, somewhat bronchial, in- and expiration, with râles over left chest behind; breath-sounds somewhat hollow in left supra-spinous fossa. No other alteration of physical signs as compared with first examination.

REMARKS.—The comparison of the physical signs of the first and last examinations indicated that during the course of treatment either a new cavity had been forming at the left apex, or the old one in the third interspace had been extending upwards—further, that infiltration was probably increasing in the right lung.

CASE IV.—L.—December 23.—Chest moderately well developed; rather shallow; expansion fair, right side moving more than left. Clavicular fossæ somewhat depressed. Vocal fremitus greater on upper part of right side. The percussion note of right clavicular fossæ impaired and higher-pitched; right axilla duller and higher-pitched than the left. Nothing else abnormal on percussion of chest. Bronchial inspiration, and bronchial, somewhat hollow expiration at right apex to third rib; below this a few râles audible. Expiration at left apex prolonged and broncho-vesicular, and râles heard throughout the entire front of left chest. In right supra-spinous fossa rough inspiration with crackling mucous râles; prolonged high-pitched expiration; increased vocal resonance. Crackling mucous râles over rest of right chest behind. In left supra-spinous fossa expiration somewhat prolonged; no râles over back of left chest. Numerous fine râles in the right axilla; a few in left.

December 28.—There is no material change in the physical signs.

January 9.—Hollow bronchial expiration without râles at right apex down to third rib; at left apex, also, prolonged, somewhat hollow, and bronchial expiration down to the third rib. There appear to be fewer râles than at the first examination.

REMARKS.—The condition of this patient's lungs at the last examination was hardly so good as at the first. The evidences of a cavity at the left apex were decidedly more distinct.

CASE V.—Z.—December 21.—Chest broad and deep; expansion rather poor; right side moves possibly a little more than left; clavicular fossæ depressed, especially on left side.

Percussion impaired at right apex; normal over rest of chest in front. Dulness extends rather high into left axilla and shifts with change of position of patient. Posteriorly dulness extends downward from opposite about tenth dorsal spine on the left side and shifts with change of position. Expiration a little prolonged below left clavicle; still more below right. In latter situation are increased vocal resonance and a few mucous râles with inspiration. In front are numerous friction sounds on left side from about the seventh interspace downward, and a few at base of right chest. Expiration prolonged in right supra-spinous fossa. A few râles here. Lower on right side behind a few friction sounds audible. Vocal fremitus and vocal resonance feeble over the dull area at base of the left chest posteriorly.

December 28.—There are evidences of decidedly increased pleural effusion in the left chest, the line of dulness behind now beginning opposite the sixth spine upon the left side. Impairment of percussion resonance in left supra-spinous fossa; wooden tympany in right supra-spinous fossa. Low-pitched respiration of no definitely abnormal quality at each apex. Friction sounds as at first examination. Cavernous expiration with fine mucous râles on both in- and expiration in the right supra-spinous fossa. In the left supra-spinous fossa breathing has somewhat this same character. No other changes as compared with first examination.

January 14.—Evidences of increasing pleural effusion; breath and voice sounds feeble over nearly all of left chest; expiration prolonged over nearly all of right side (probably compensatory). The friction-sounds on left side have disappeared, and there are no râles audible below clavicles. No other modifications in the physical signs.

January 29 (seven days after aspiration).—Both clavicular fossæ impaired on percussion; rest of right side in front rather higher-pitched and slightly impaired. Left side, posteriorly, somewhat impaired percussion-note, to two inches below angle of scapula; here flatness begins, not shifting with change of position; right spinous fossa duller and higher-pitched than left. Distant, feeble inspiration at right apex; a few râles over all of right chest in front, and expiration prolonged and harsh. At left apex breathing rather feeble, not distinctly bronchial. A few mucous râles occasionally heard over all of left chest in front, and expiration is prolonged and harsh. Respiration feeble, with a few râles over both sides posteriorly.

REMARKS.—The second examination showed decidedly greater evidence of cavity at the right apex, and possibly at the left also. At the last examination respiration was everywhere so feeble that the results obtained were unsatisfactory. On the whole, no material alterations in the signs could be detected.

CASE VI.—H.—December 22.—Chest rather narrow in upper portion; broader below; expansion poor, especially above; some depression at clavicles. The percussion of right supra-clavicular fossa higher-pitched, but not dull; right infra-clavicular fossa slightly impaired and higher-pitched; second right interspace very slightly impaired, but distinctly higher-pitched; right supra-spinous fossa very slightly higher-pitched. No other change noted in percussion of chest. Harsh inspiration with fine râles and prolonged, broncho-vesicular expiration with increased vocal resonance at right apex down as far as the third rib. Harsh inspiration and broncho-vesicular expiration in the right supra-spinous fossa. Rest of chest normal respiratory murmur.

December 28.—Physical signs as at first, except that number of râles very greatly less; can be heard in second right interspace only.

January 27.—Broncho-vesicular inspiration and bronchial expiration in right clavicular fossæ down to the second rib; rather numerous fine mucous râles with inspiration, heard as far as third interspace. Percussion resonance impaired down to third rib.

REMARKS.—The physical signs noted at the second examination had very greatly improved, in that the râles seemed to have almost entirely disappeared. At the last examination, however, they were rather more numerous than when the patient entered the hospital, and the evidences of consolidation, as shown

both by percussion and auscultation, seemed to be rather greater. It may very probably be the case that these signs were due to a temporary blocking of the vesicles and bronchioles with secretion from the diseased tissue.

CASE VII.—H.—January 20.—Chest long, deep and narrow; expansion good; the right side in lower portion moves more than left; clavicular fossæ somewhat depressed on each side; no difference in the vocal fremitus on the two sides. Percussion higher-pitched and impaired nearly everywhere over left side in front. Right supra-spinous fossa impaired and high-pitched; whole of left chest behind impaired. No other abnormal percussion signs. Expiration bronchial in right supra-clavicular fossa, and prolonged in right infra-clavicular fossa. Bronchial inspiration with râles, and bronchial expiration at left apex down to third rib; râles audible over almost entire left chest in front. In left spinous fossæ bronchial inspiration with râles, and bronchial expiration; right supra-spinous fossa expiration bronchial.

February 1.—Right clavicular fossæ slightly impaired, but less so than on left side. At the left clavicular and supra-spinous fossæ expiration rather low-pitched and somewhat hollow; no râles in front, a very few behind. Whispered bronchophony very distinct in front. Spleen not enlarged.

REMARKS.—There was practically no change noticed in the physical signs of the two examinations. The diminished number of râles heard at the second, and the more distinct evidences of a cavity in the left apex, were probably due to the fact that the patient had just had a severe attack of coughing and had freed his lung of a large amount of sputum which had accumulated there.

CASE VIII.—R.—December 16.—Chest rather long, of fair depth, but quite narrow; expansion fairly good above, but poor below. Vocal fremitus a little greater in the right mammary region; slight depression of the clavicular fossæ of both sides. Nothing abnormal on percussion. A few clicking râles audible with both in- and expiration from spine of left scapula downward. Nowhere else is anything abnormal on auscultation.

December 27.—Râles at left base rather more evident than at first examination; vocal fremitus a little increased here.

January 9.—The clicking râles with inspiration decidedly more numerous over left chest posteriorly, and expiration seems a little prolonged.

February 1.—No discernible abnormality of respiratory murmur at left base; râles very few and only occasionally heard. Spleen not enlarged.

REMARKS.—During the period of observation the signs of infiltration at the posterior portion of the left chest first decidedly increased, and subsequently again diminished, so that at the last examination the evidences of the disease were rather less than at the time of admission.

CASE IX.—C.—January 22.—Chest broad and deep; expansion good, symmetrical; no noteworthy depression of clavicular fossæ; no differences in fremitus. Right clavicular and infra-spinous fossæ are slightly duller and higher-pitched on percussion; right intra-spinous fossa higher-pitched. Nothing else is to be noted on percussion of the chest. Slight prolongation of expiration and increased vocal resonance in the right clavicular fossæ; no râles here. In right supra-spinous fossa prolonged, broncho-vesicular in- and expiration without râles; right intra-spinous fossa prolonged expiration, and a few fine mucous râles with inspiration. Vocal fremitus and vocal resonance increased in right spinous fossæ.

February 1.—No appreciable difference in the physical signs. Spleen not increased in size.

REMARKS.—The case was under observation too short a time to expect any physical changes of moment.

Case X.—C.—January 25.—Chest rather narrow, particularly above; expansion fairly good, symmetrical; both clavicular regions quite flattened. The percussion of right clavicular fossæ impaired, high-pitched, slightly tympanitic. Rest of the right side somewhat impaired resonance everywhere anteriorly. Some dulness in lower left axillary region. Right spinous fossæ slightly higher-pitched and somewhat tympanitic. Cavernous in- and expiration, very loud vocal resonance, and numerous râles in right clavicular fossæ and second interspace. Below this a very few râles, but no alteration of quality of respiration. At left apex broncho-vesicular in- and expiration with quite numerous râles, with inspiration as far as third rib. In left axilla inspiration rather harsh; no râles. Right supra-spinous fossa broncho-vesicular inspiration and high-pitched bronchial expiration; no râles. Right infra-spinous fossa very prolonged expiration, and a few râles attend inspiration; while lower on right chest expiration again becomes rather more bronchial. Vocal resonance increased on right side; whispered bronchophony in right infra-spinous fossa. In left supra-spinous fossa inspiration somewhat harsh with a few râles; expiration rather bronchial.

February 2.—There is no material change in the condition of the physical signs. Only a few râles heard at left apex. On opening the mouth, percussion at right apex high-pitched and very tympanitic; almost cracked-pot in character.

Remarks.—No material change could be expected after treatment lasting so short a time; and no change was noted except the diminution in the number of râles at the left apex.

Case XI.—Sc.—December 7.—Chest very broad and deep; expansion fair; right apex possibly moving somewhat more than left. Depression at the right clavicular fossæ, due, possibly, to an old fracture of clavicle. Vocal fremitus slightly increased at right apex. Percussion resonance in right supra-clavicular fossa decidedly impaired and high-pitched. Right supra-spinous fossa slightly dull. In- and expiration bronchial in right supra-clavicular fossa; broncho-vesicular in right infra-clavicular fossa; a few râles with deep inspiration in each situation. In right supra-spinous fossa inspiration broncho-vesicular, and expiration somewhat bronchial; some mucous râles.

January 5.—There is no perceptible difference in the character of the physical signs.

January 12.—No appreciable difference in the physical signs.

February 1.—Percussion resonance of right clavicular fossæ, and second interspace slightly duller and higher-pitched; right spinous fossæ also somewhat impaired. In right supra-clavicular fossa inspiration bronchial with a few râles; expiration quite loud and bronchial. In right infra-clavicular fossa condition much the same, but less well marked. In right super-spinous fossa in- and expiration bronchial; and in infra-spinous fossa slightly so. Spleen not enlarged.

Remarks.—The physical signs would indicate that the disease in this case had spread somewhat in the right lung. The patient, who had been under observation for some months before inoculations were commenced, exhibited not the slightest alteration in the pulmonary condition until within the last three weeks. The change may be only temporary.

Case XII.—Grace M.—December 24.—Chest rather long, narrow, not very deep; expansion poor, right side moves more than the left. Clavicular fossæ depressed, especially the right. On percussion the right clavicular fossæ and first interspace duller and higher-pitched; right supra-spinous fossa higher-pitched. In right clavicular fossæ harsh inspiration and broncho-vesicular expiration without râles. In second left intercostal space cavernous in- and expiration with very marked whispered pectoriloquy. Prolonged expiration in right supra-spinous fossa.

December 29.—No change in the physical signs.

January 7.—Decidedly bronchial in- and expiration in right clavicular fossæ; bronchial, very high-pitched, loud in- and expiration in the second right interspace. The same cavernous respiration as at the first examination is found in the second left interspace.

REMARKS.—An advanced case, in which the physical signs indicated rapidly progressing disease, even during the short stay in the hospital.

Case XIII.—Mrs. W.—January 8.—Chest well formed; expansion good, possibly a little better on right side. No clavicular depression. Percussion of right clavicular fossæ slightly dull; the right supra-spinous fossa higher-pitched but resonant; right infra-spinous fossa high-pitched wooden tympany. Broncho-vesicular inspiration with numerous râles, and bronchial expiration in right clavicular fossæ. Expiration possibly slightly prolonged over the rest of right chest in front. Right spinous fossæ normal inspiration except a few râles; bronchial expiration. A few râles over rest of right chest behind.

January 18.—There appears to be a greater degree of dulness in the right clavicular fossæ. A few râles with inspiration over the left side. No other change in the physical signs.

REMARKS.—Practically no alteration was noticed in the physical signs in this case; if any, the change was for the worse.

Case XIV.—Mrs. N.—December 17.—Chest long, shallow; expansion fair; right chest moves more than left. Clavicular fossæ depressed on both sides; no differences in vocal fremitus. On percussion the left clavicular and supra-spinous fossæ duller and higher-pitched. Distinctly bronchial in- and expiration with fine mucous râles, not constantly heard, in left clavicular fossæ. Over rest of left chest in front rather prolonged vesicular expiration, and a few fine râles occasionally with inspiration. In left supra-spinous fossa bronchial in- and expiration, and a few râles with inspiration. Nothing else to note on percussion or auscultation.

January 7.—No noteworthy change in the physical signs.

January 24.—Bronchial expiration at left apex extends to second rib. Expiration rather prolonged in right supra-clavicular and supra-spinous fossæ.

REMARKS.—No positive alteration in the physical signs witnessed in this case.

Case XV.—Miss D.—January 1.—Chest of average dimensions; expansion good; left clavicular fossæ slightly more depressed than on right. Percussion in left supra- and infra-clavicular fossæ very slightly impaired and higher-pitched. Bronchial expiration and harsh inspiration in left clavicular fossæ, with rather numerous coarse râles at end of deep inspiration. A few râles with inspiration in left infra-spinous fossa. Nothing else noted on auscultation or percussion.

January 7.—A few râles attend rather harsh inspiration in left clavicular fossæ. Expiration prolonged, scarcely bronchial.

January 15.—Râles can scarcely be heard at the left apex. Respiration simply harsh, not bronchial.

January 24.—Percussion a little impaired and high-pitched at the left apex but no râles can be heard.

February 2.—Rather more expansion on right side. Slight depression of left clavicular fossæ; percussion here rather dull and high-pitched. Left supra-spinous fossa somewhat impaired. At left apex vocal resonance increased. No râles heard (except a loud, piping rhonchus audible over whole chest); the quality of the respiratory murmur not altered. In left axilla and over the base of the left chest in front a very peculiar, somewhat bleating bronchophony is audible, and, on deep respiration, bronchial expiration becomes very marked. Fine mucous râles on both sides of chest in front below. Spleen not enlarged.

REMARKS.—There was without doubt in this case a great improvement in the condition at the left apex; but the state of the base of the left lung in front found at the final examination, and the râles also detected at the right side.

were so evident that they could scarcely have been overlooked at the first examination had they been present, and one can scarcely avoid the conclusion that there has been on the left side rapid development of extensive pulmonary lesions of the base, with a catarrhal condition of the right side.

Case XVI.—Mrs. V.—December 31.—Chest long, flat, and slightly narrow; expansion fair; right side moves more than left; left clavicular fossæ decidedly depressed; vocal fremitus greater on left side. Percussion of left clavicular fossæ higher-pitched, but not distinctly impaired; rest of left chest in front and in axilla impaired. Posteriorly a dulness which does not shift begins on left side opposite eighth dorsal spine, and extends downward. Low-pitched, somewhat hollow in- and expiration, with numerous bubbling and crackling râles in left clavicular fossæ. Elsewhere over left chest very numerous loud râles considerably mask the character of the feeble respiration, though expiration in second left interspace is distinctly prolonged and bronchial. Vocal resonance increased on left side of chest. Right supra- and infra-clavicular fossæ prolonged but not bronchial expiration; no râles. Respiration feeble on the left side behind, and numerous fine râles attend inspiration; vocal resonance increased. Possibly a few râles in the right supra-spinous fossa.

January 14.—Practically no alteration of physical signs.

January 30.—No râles heard in right supra-spinous fossa; whole left chest behind impaired on percussion. No other alteration of physical signs as compared with first examination. Spleen not enlarged.

REMARKS.—There appeared to have been some extension of the disease in the left chest.

Case XVII.—B.—January 5.—Chest broad and deep below, narrow above; expansion almost absent; clavicular fossæ depressed, especially on right side; vocal fremitus greater at right apex. Percussion impaired and high-pitched over whole of right side in front and in axilla. Right supra-spinous fossa depressed; resonant and somewhat tympanitic on percussion. Right infra-spinous fossa higher-pitched, but somewhat resonant. Rest of right chest posteriorly somewhat impaired and higher-pitched. Left supra-spinous fossa dull. Respiration very feeble at right apex, with piping and creaking râles; expiration a little prolonged. Over rest of right chest in front slightly bronchial in- and expiration with quite numerous râles, many of which have the character of pleural friction sounds. In right supra-spinous fossa vocal resonance increased; respiration very feeble, attended by râles. Over the rest of the right chest are râles, increased vocal fremitus and resonance, and prolonged in- and expiration which, in the lower portion, are slightly bronchial.

January 15.—Percussion impaired, somewhat wooden and tympanitic in right supra-spinous fossa. Bronchial in- and expiration at the right apex in front. A few very fine râles over left chest in front. No other point of difference from first examination.

January 29.—Left infra-clavicular fossa very tympanitic and low-pitched on percussion; rest of left chest impaired. Left supra-spinous fossa high-pitched and dull, and left infra-spinous fossa somewhat impaired. Right supra-spinous fossa high-pitched tympany. Right clavicular fossæ impaired, tympanitic. Expiration almost inaudible on both sides; râles attend inspiration. At apices in front expiration indistinctly bronchial. Posteriorly, respiration very feeble over upper portion of both sides of chest, and numerous râles attend inspiration. Spleen not enlarged.

REMARKS.—The condition of this patient's lungs evidently became worse while he was under observation. There was undoubtedly present at the final examination a greater development of disease in the left lung than had been noted previously.

Case XVIII.—K.—January 7.—Chest short, well-shaped, flat at the upper portion; expansion poor above, much better on right side. Clavicular fossæ depressed. Percussion at

right apex decidedly impaired as far as the third rib. Left supra-clavicular fossa impaired. Right supra-spinous fossa somewhat depressed, and tympanitic and high-pitched on percussion; right infra-spinous fossa impaired. Decidedly cavernous in- and expiration in right supra-clavicular fossa; still more marked in infra-clavicular fossa, and some râles are audible here with inspiration. Numerous râles with inspiration over rest of right chest in front. At left apex expiration is prolonged and somewhat bronchial as far as the third rib. A few clicking râles with inspiration all over left chest in front. Bronchial, somewhat hollow expiration, and harsh, rather hollow inspiration with a few râles in right supra-spinous fossa. Left supra-spinous fossa expiration rather prolonged.

January 18.—No marked change in the character of the physical signs except that the râles in the left side are rather more numerous and extended.

February 2.—Probably not so many râles over right chest in front as at previous examinations, but more upon the left. Cavernous quality of respiration not so marked at right clavicular fossæ, but evident in right supra-spinous fossa. Percussion of left clavicular fossæ somewhat impaired. Spleen not enlarged.

REMARKS.—There seemed to have been some advancement of the process in the left lung. No other changes noted.

CASE XIX.—R.—December 2.—Chest broad, rather short and deep; expansion good; right side moves more than left. No differences in vocal fremitus; clavicular fossæ depressed, a little more upon the left side. Percussion of left clavicular fossæ lower-pitched than the right and somewhat tympanitic. Rest of both sides in front and in axilla rather hyper-resonant. Left supra-spinous fossa lower-pitched, not tympanitic; left infra-spinous fossa decidedly lower-pitched than right side. Left supra-clavicular fossa low-pitched, rather feeble inspiration with some râles; high-pitched cavernous expiration. Left infra-clavicular fossa feeble, rather hollow expiration, with râles on inspiration. Rest of the left chest in front and axilla respiration feebler than on right side, and numerous fine râles attend inspiration. Left supra-spinous fossa harsh inspiration with a few râles; cavernous expiration. Rest of left chest behind expiration decidedly bronchial; vocal resonance increased; bronchophony marked. Numerous râles in left infra-spinous fossa. Right supra-spinous fossa broncho-vesicular inspiration, with a few râles after coughing; somewhat bronchial, high-pitched expiration. Right supra-clavicular fossa prolonged, low-pitched expiration; rather harsh inspiration. Nothing else to note on right side.

December 28.—No alteration in the physical signs.

January 18.—Percussion of right supra- and infra-clavicular fossæ decidedly tympanitic, lower-pitched than left side. Rest of the right chest has somewhat of a wooden tympanitic note. Right spinous fossæ somewhat more resonant than left. Harsh inspiration, with slightly bronchial, rather hollow expiration on right side down to about second rib; expiration not at all distinctly cavernous, except above clavicle; a few râles at end of deep inspiration. Left clavicular fossæ distinctly hollow in- and expiration with a number of piping râles. Respiration feeble over entire left side in front and behind, and râles so numerous that character of breathing is concealed. No other changes from the first examination.

REMARKS.—The difference in the percussion signs found at the first and the last examinations depended probably on the blocking up of the left lung with secretion, and a consequent compensatory dilatation of the right lung. It is very probable, however, that actual softening also was going on in the apex of the right lung, and that, too, with considerable rapidity, which explains in some part the production of a tympanitic note here.

GENERAL CONCLUSIONS.

No alteration for the better occurred in the physical signs of any of the patients, other than might be expected in some of a number of phthisical

patients subjected to favorable hygienic conditions. The improvement consisted in a diminution in the number of râles. It was witnessed in but few instances.

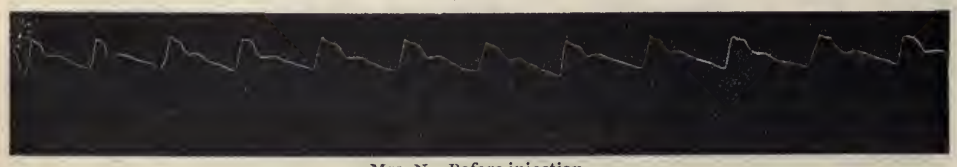
In the majority of the cases, either no appreciable changes in the physical signs could be detected, or the alteration found indicated more or less deterioration in the condition of the lungs.

THE PULSE DURING REACTION FOLLOWING INJECTION OF KOCH'S REMEDY.

By H. B. Allyn, M.D.

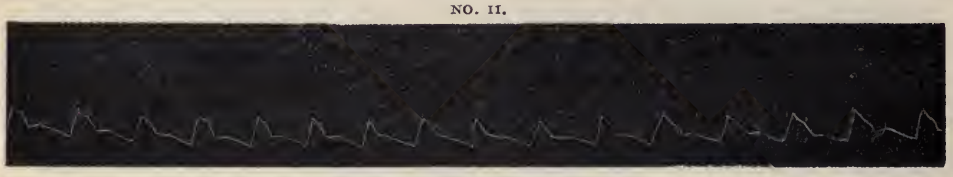
The pulse of patients in the stage of reaction following injection of Koch's remedy generally exhibits a lessening of the arterial tension, an increase in frequency and in volume, and a shortening of the duration of the individual beats. The effect upon the tension occurs more constantly than the other changes, except increase of frequency; both of these are well shown in the tracings taken in Mrs. N.'s case. Before injection the pulse exhibited marked high tension, and is easy to see, in comparing the tracings, the lessening which

NO. I.



Mrs. N. Before injection.

NO. II.

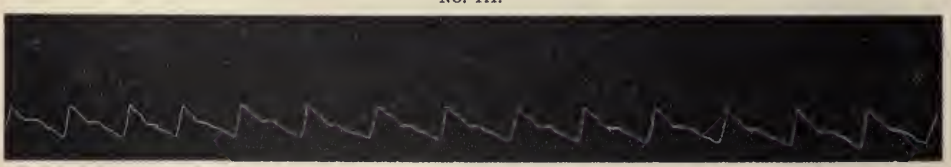


Mrs. N. After injection.

has taken place after injection and during reaction. There is no change in the volume of the pulse in this case.

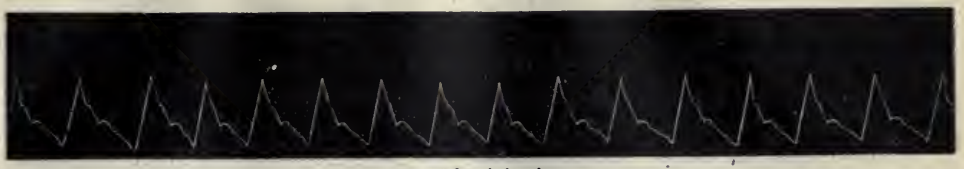
In the following two tracings taken from the pulse of R., the change in volume is very well shown, the up-stroke in the second tracing being a little more than twice the height of the up-stroke in the first tracing. Arterial tension is also diminished, and discrotism is increased.

NO. III.



R. Before injection.

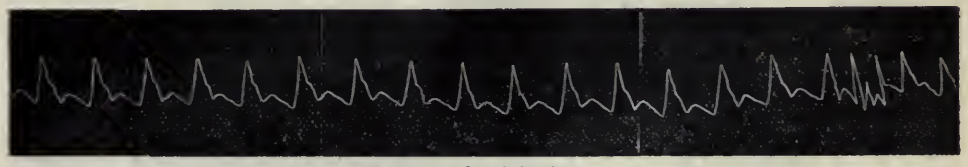
NO. IV.



R. After injection.

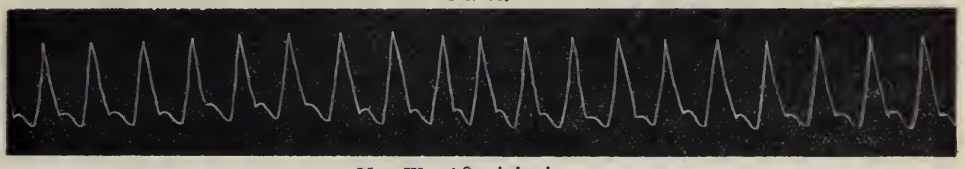
The effect upon the volume of the pulse is most strikingly shown in the following tracings from Mrs. W.'s pulse. Both show very pronounced low tension. It is worthy of note that at the time of the second tracing the temperature was 104.1°, the pulse 124, and the respiration 22.

NO. V.



Mrs. W. Before injection.

No. VI.



Mrs. W. After injection.

The changes in the pulse, which the sphygmographic tracings exhibit very well, are, in the main, such as occur in conditions of pyrexia; the pulse is increased in frequency, the arterio-capillary resistance is lessened, the elasticity of the vessel walls is increased, and the volume of pulse becomes greater. These conditions give the frequent, large, soft pulse of fevers. The high up-stroke, well shown in the tracings from the pulses of R. and W., show that the heart is acting forcibly while the vessel walls are relaxed. The increase in volume is largely due to increased elasticity of the vessels and diminished arterio-capillary resistance. In all probability the actual power of the heart is lessened.

Whether or not the remedy has any effect upon the circulation, apart from the pyrexia excited by it, cannot be determined from these tracings, as they were taken during the stage of reaction. A study of the pulse before treatment and after it had ceased for a time would throw light upon this question.

As regards the rhythm of the pulse, this has remained practically unaltered in all the cases. In one of the patients considerable irregularity was noted, but he was a very sick man with a feeble circulation, and there is no reason to suppose that the remedy produced the irregularity. In some instances the pulse has been noticeably more affected than the temperature or respiration.

BLOOD AND URINE.

By JOHN S. SHOBER, M.D.,
Dispensary Surgeon, University Hospital.

SINCE the last report, investigations have been carried on in much the same manner as heretofore, and have in all respects confirmed previous results. It has been observed that of nineteen old cases, in which continued observations have been made, the hæmoglobin is increasing in percentage in seven, remaining about the same in six, and diminishing in six.

It is especially to be observed that the cases in which this improvement is marked are those who have attained a certain degree of immunity to the agent, and whose general condition and body-weight are on the gain.

During the past few weeks special attention has been paid to the influence of the remedy on the proportion of white blood corpuscles to red blood corpuscles in the blood, and it has been found that after inoculations the white corpuscles are *less* numerous than before. In one case the proportion before inoculation was 1 white to 170 red, and after inoculation 1 white to 680 red. Again, before inoculation, 1 white to 82 red; after inoculation, 1 white to 480 red. This result does not seem to be in accord with reports from elsewhere, and can perhaps be explained by the fact that most of our examinations were made in the afternoon, and usually an hour or so after the patients had eaten their dinners.

We still continue to find an albuminuria developing after the inoculations, and a few red blood corpuscles have been noted in the urine in about one-third of the cases.

Leucocytes can almost invariably be found in the cases when albumen is present.

SPECIAL CORRESPONDENCE FROM BERLIN.

KÖNIGIN AUGUSTA STR. 36, BERLIN, January 15th, 1891.

To the Tuberculosis Commission of the University of Pennsylvania:

With this mail you will receive the important number of the *Deutsche med. Wochenschrift* of this date. I have hesitated whether I should cable to you the announcement made by Prof. Koch, but have decided not to do so because I understand that a cablegram has been sent to the daily press. To many, I suppose, the announcement will not be a surprise. It was very evident that only one thing could produce the remarkable effects of this lymph, and that is the tubercle bacillus itself. To think of anything else producing such results we would have been forced to build, upon new principles, an entirely new pathology. The statement made by Prof. Koch is a model of simplicity and clearness. The directness of his line of investigation, from the first suggestive fact to the final conclusion, is an unsurpassed attainment of mental discipline. The triumph of the author is complete. He has discovered new facts, he has studied them thoroughly, and he now announces them with becoming modesty. If we remove from this discovery all possibility of success as a therapeutic agent, if we take away the widespread interest it has awakened, it still remains unequalled by any other discovery in the history of medicine. For Prof. Robert Koch has given us the first clear insight into the functional pathology of the approaching epoch.

Unfortunately many hopes awakened by this discovery have not been verified. The building upon this basis of a system of treatment is the weakest part of the structure. The

curative operation of the agent is limited to a small number of cases. These cases we can perhaps conceive as curable by other means. The anticipation of success was founded on the fact that the treatment was an imitation of the natural process of the cure of tuberculosis. It was, in fact, more than an imitation; it was the process of elimination itself, as it naturally exists in the body, and was brought about by the same means. But the natural process of healing of tuberculosis is twofold. It consists: first, in the elimination of affected tissues by the operation of the agent discovered by Koch, and which is elaborated in the body of the sick; and second, in the resistance of surrounding tissues and of the whole organism against a successful auto-inoculation. This latter effort we recognize clinically in the general improvement of the health. Whoever has had the good fortune to watch the return to health of a patient suffering with tuberculosis will remember that this change is attended by no uncertain signs. It does not require a microscope, or scales, or measurements of the vital capacity to detect it. Now, the Koch treatment differs in two very important particulars from the natural process. In the first place, it fails entirely or does not even pretend to bring about the second element of the healing process. In fact, it is possible that the injections, in some cases, have actually impaired the resistance of the organism.

The second difference refers to the process of elimination. By the Koch method of saturation of the fluids, the elimination takes the form of an acute process. In the natural healing the elimination takes place slowly, through chronic inflammatory changes that secure at the same time a certain amount of isolation, in which there is safety. The rapidity of the process induced by saturation may bring about, as I said in a previous communication, and as is also advanced by Prof. Virchow, a metastasis of the tubercle bacillus, an auto-inoculation. The tubercle bacillus depends for its movements upon the movements of the fluids of the body, whether in distinct channels or intercellular paths. These circulatory currents are intensified to the utmost in the rapid method of cure of tuberculosis. From a clinical standpoint, I think there is evidence to show that this auto-inoculation has occurred to a dangerous extent, and even with fatal results in patients subjected to the treatment by inoculation.

My opportunities for anatomical investigation have been comparatively limited. As far as they go, they confirm all that Prof. Virchow has said upon this head. I have studied the lungs of four cases, the peritoneum and liver in one case of peritonitis, the lymphatic glands and bone tissue of other cases, and also a granulating ulcer that reacted strongly to the Koch injection. The bloodvessels are found filled with blood overcharged with leucocytes. The lymph paths in the lymph glands are also overfilled with cells. These are evidences of circulatory excitement—in fact, all the phenomena of acute inflammation. In many localities one meets with evidences of recent tubercular inflammation; but this, of course, is not rare in ordinary cases of rapid tuberculosis. And this is the form assumed ordinarily by the cases that terminate fatally under this treatment. We should not forget, however, that these explosions of tuberculosis are not very rare in the ordinary course of the disease, undisturbed by artificial inoculations. Is there a clinician who has not been more than once surprised to find at the *post-mortem* an unexpected extension of the pulmonary tubercular process, involving, perhaps, the whole of both lungs? This extension has evidently taken place during the few days of the last illness, during which it has been impossible to make a thorough examination of the chest. Such patients, it appears to me, have inoculated themselves with the Koch fluid. I do not find that the histological picture in the fatal cases under the new treatment differs in any essential point from that of the cases of natural rapid tuberculosis. And why should it? The elements at work are entirely the same. It is unnecessary, therefore, to repeat here a description of the histological changes.

I wish, however, to call attention to one fact, and that is, the scarcity of tubercle bacilli. It may be said that this fact would prove strong evidence against the view that the bacilli are carried metastatically to new fields. The bacilli I have found in these cases, as a rule, isolated; in necrotic fields of considerable extension, perhaps two or three, and lying toward the centre of the field. Giant cells of recent formation, quite small in size, are

numerous, especially in the lungs and lymphatic glands; and the majority of these contain no tubercle bacilli. Until further investigation, we must admit that it is possible that a saturation of the body with the products of the tubercle bacillus may produce coagulation-necrosis changes, and the accompanying nuclear proliferation, in tubercular patients, without the immediate presence of the bacillus.

In staining *sections* for tubercle bacillus, I recommend, above all others, the carbol-fuchsin method. One of the most important steps in the operation is to obtain a perfect spreading out of the section. This I do in the following manner: After removing the celloidin, the section is placed in absolute alcohol. Now it is transferred to distilled water in a large vessel, where it spreads out to the utmost upon the surface. Before it begins to sink, I take it out upon the slide. From this I remove, with a towel, the excess of water to prevent the section from swimming off in the next step of the operation. Now, I dry thoroughly and forcibly with filter paper. I use four folds of this, and press strongly, rubbing with force at the same time upon the paper. I generally place the section toward one end of the slide. I now allow a few drops of the carbol-fuchsin solution to drop from the filter upon the section. Then the end of the slide with the stain upon it is placed over the flame of the spirit lamp, at some distance, in order that the glass and fluid may be slowly heated, until steam begins to rise. At this point I place the slide under cover for seven minutes. The excess of fuchsin is then washed off in water in a large vessel. The excess of water is dried off with a towel. A few drops of Gabbet's solution are dropped upon the section, and are thrown off in less than one minute. The slide is now washed by a stream of 96 per cent. alcohol from a pipette, until the tissue takes a very pale blue color. Then follow the oil of cloves and Canada balsam.

If any further demonstration was needed of the bacillary nature of tuberculosis, the discovery of Prof. Koch leaves no room for doubt. This discovery is also a strong blow given to the partisans of the doctrine of Phagocytosis (Metschnikoff). This theory has been barren of practical results. On the other hand, those who contend for the dominating influence of the fluids (Weigert, Baumgarten, etc.) can point to this recent discovery of Koch, and to many others, as practical applications of their doctrine.

Very truly yours,

JOHN GUITERAS.

The first supply of Koch's remedy received by the commission came from Dr. Billings. Shortly after this Dr. Rosenthal contributed a quantity of the dilution.

From Dr. Guiteras three flasks have been received. In view of the urgent demand for the remedy from all parts of the world, the supply forwarded by Dr. Guiteras may be considered liberal. His success is attributed both to official courtesy and to the zeal and advocacy of influential friends of the University in Berlin.

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ORIGINAL ARTICLES.

THE NERVOUS AUTONOMY OF THE HUMAN BODY IN HEALTH AND DISEASE.

A LECTURE

By A. F. A. King, M.D.,

Professor of Obstetrics, Medical Department, Columbian University, Washington, D. C.

When we reflect that every organ and tissue of the body is made up of countless myriads of cells; that each individual cell lives its own life, performs its own functions, dies its own death, and is replaced by its successor; and when we further consider that the special life-work of each individual cell not only exhibits the usual struggle for self-support and self-preservation, but in the very act of doing so contributes its share toward the support and preservation of the human body of which it constitutes only one insignificant atom, it is almost impossible to avoid the further conclusion that, in order to secure the harmonious working of so many millions of individuals for the benefit of the larger body in which they are contained, they must be regulated by some sort of *general government*. Without such regulation and control, the hosts of cells composing this tremendous population of microscopic individuals would run into riot and disorder. Undoubtedly some such form of government must and does exist; and surely a proper understanding of this automatic autonomy of the human body (while a matter of fascinating interest) becomes one of the most important and essential requisites for medical study and medical practice.

What organs perform the functions of government? What are the laws which the government is striving to administer? Some of them deeply rooted

and inherited through many generations of ancestry, which we may well call *constitutional* laws—others more circumscribed, and applicable only to particular organs which may be likened to *local statutes*. What is the history, and what the origin of these laws?

In the evolution of a highly-developed organism (like that of man) from the lowly monad, modifying itself and its functions from time to time through a long wilderness of ages, what an endless series of amendments to its constitution must have been required! As new organs developed, new regulations for the government of their functions must have arisen; and as old structures, no longer necessary, became atrophied from disuse and dwindled into rudimentary excrescences—like the tonsil, the thymus, the coccyx, the appendix vermiformis, etc.—what numerous statutes once governing their activities must have become obsolete!

These laws are, for the most part, as yet unwritten, and, as their history leads us back through an infinity of time, so their origin must be traced back, link by link, through an infinity of lower organisms, and thus the doctrine of Evolution becomes the Supreme Court to which our final appeal for an intelligent explanation of the laws governing the constitution of man must be made. Every animal that lives is a commentary upon these laws and helps to explain their origin and meaning. The animalcule and the mammoth, the birds and beasts of the forest, the inhabitants of the sea, even the silent shells upon its shore and the fossils embedded in its rocks, are so many leaves in the Book of Nature, where we may read the recorded history and trace the origin of laws that govern the living beings of to-day, and thus bring ourselves to an intelligent comprehension of that complex epitome of historic legislation displayed in the constitution and by-laws of a human body.

Recurring now to the question, How is this government maintained, and by what organs is it administered? the reply is inevitable: it is the *nervous system*. Indeed, if instead of considering the body *microscopically* which displays millions of individuals, and aggregates of aggregates, we go to the other extreme and regard it *macroscopically*, and this in the coarsest possible manner, we find that the entire structure may be profitably studied as consisting of only *two parts* or two things, viz., (1) the nervous system; (2) all parts other than the nervous system, or, in other words, (1) *organs of government;* (2) *organs governed*. In fact, to go a little farther, we may regard the nervous system not only as a sovereign ruler exercising its dominion over, controlling and co-ordinating other functions and structures, but also as enjoying an absolute and complete *ownership* of all other parts. The nervous system is the individual, and the rest of the body belongs to it; it is lord of the manor, while the other regions of the body constitute its inherited domain—its obedient vassals. It presides over and regulates the distribution of *matter* (blood) and the distribution of *force* (motor power). In also *regulating its own development* during embryonic life and the earlier periods of growth, it has built around itself a habitation of bone for its protection, to which it has appended organs of locomotion, and instruments of special sense; while the numerous viscera of the digestive and nutritive apparatus, with their millions of working cells, are so many pro-

ducing factories ever contributing new material and pouring their manufactured products into the general treasury of matter—the blood—to be again distributed by the nervous system which appropriates to each organ the amount deserved or required in accordance with the degree of its functional activity.

This autocratic nervous system is willingly served by the loyal legions of cells that are taxed for its support, that obey its mandates and are daily and hourly working in obedience to them, thus supporting the government upon the continued administration of which the peaceful and successful pursuit of their own individual life-history entirely depends. It is government with the full consent of the governed. If the government stop, the man dies; and though the microscopic inhabitants may still survive a number of hours, their demise within a short period is inevitable, unless indeed they be transplanted into the organism of another individual where life and government are normally maintained (as is illustrated in the grafting of skin from a corpse into the person of a living individual), when they become, as it were, naturalized citizens of a new territory, under a new government, and thus extend their lease of life.

This intimate and indissoluble relation between the government and the governed is exhibited in every form of animal life, from the lowest and simplest (the nucleus being the governing nervous centre of a simple cell) to the highest and most complex. It is also apparent in every *stage* of life in each individual, from the first beginnings of embryological development until death. The process of *growth* is just as much governed by nervous influence as the act of respiration or the pulsations of the heart. And so of all other processes. This is the common teaching of accepted *physiology*. The government is directed to the welfare and preservation of the entire body, and the better this is accomplished so much the better for the countless individual histological units of which the body is composed.

Having now considered the nervous government of the body in *health*, and its conservative purpose of maintaining the welfare of the individual, let us next carry the same idea into the *domain of disease*. Pathology is only modified physiology. The observed variations in structure and function belonging to disease are subservient to the same reigning power—the nervous system—as are those of health. In order to understand the natural history of any pathological condition—which is a most necessary step towards suitable treatment—we should simply ask ourselves: What is the reigning government of the nervous system trying to do in permitting the observed variations from a normal state to take place? Under the circumstances in which disease occurs, do the processes observed contribute to the welfare and preservation of the individual? Now, from time immemorial it has been almost universally recognized that some processes of disease are conservative, while others are not; and while there are doubtless natural reasons for this difference, they have not been succinctly defined, nor yet all of them discovered.

From what has already been said, we might start out with the following *a priori* proposition, viz.: *Those processes are conservative which are thoroughly under the control of nerve-government; those not conservative are not under this governing control of the nervous system.* For example, a calculus, whether vesical, biliary, or of whatever kind, is always mischievous, never useful. But

let us observe that this calculus is not even *united* with the body politic; it lies loose in a cavity, like a marble in the mouth or a pebble in the ear; it is entirely cut off from any connection with the nervous system. It has been formed not in obedience to the *vital* laws governing the constitution of the body and administered by the nervous system, but in obedience to the laws of physics and chemistry. It is a "foreign body," separate from and not recognized as a part of the social organization of cellular inhabitants, over which the nervous system exercises control. But does the government take no cognizance of this foreign mass in the interior of one of its visceral cavities? It does, and inaugurates certain processes, having for their ultimate design the expulsion of the stone. An attack of renal or hepatic colic is one of these processes, and it is just as much a matter of design on the part of the governing nervous system to expel the stone as the process of labor is designed to expel a child from the reproductive canal. Still again, should the calculus—be it a renal one—lodge in the bladder and fail to be ejected by the urethra, there take place inflammation, ulceration and eventually the formation of a fistulous opening, through which the foreign intruder is expelled. Such cases have been observed, but are rare, because the knife of the surgeon, imitating Nature by artificial means, removes the stone by lithotomy.

There is no conservative utility in a polypus. A polypus has no nerves. Cancers and fibroid tumors are not conservative; they have no nerves. Cancer has long ago been regarded by the microscopist as a "histological mob"—a "rebellion of cells"—a growth without order or government. And thus, perhaps, may we account for the frequent occurrence of uterine cancer late in life. This organ, no longer performing any active function, doubtless has its nerve-supply as well as its blood-supply reduced or suspended. A few of these rebellious cells, having by some means gained a foothold, remain, multiply and grow, *independent of nervous control*, into the malignant neoplasm. It is a growth beyond the frontier; outside the jurisdiction of nerve government; orders cannot reach it.

Dr. Harrison Allen, in his Anatomy,[1] tells us that, while the sympathetic system is one of great importance in the economy, the examples are but few in which any application of a knowledge of the nerves composing it has been made to clinical medicine. He then mentions a few isolated cases in which serious diseases were observed to follow (or at least accompany) lesions or injuries of this system. Now in these cases, where the *government itself is defective*—where its communication with certain regions has been impeded or cut off—it must not surprise us to find *conservative utility lacking* in the pathological processes observed to take place.

If now we look at the process of acute inflammation, especially of an extensive character, it appears, at first sight, to exhibit no conservative elements. And why? Because it is the result of imperfect control by the nerve-government. Some cause of irritation, chemical, mechanical or functional, has been too severe for the limited (*always* limited—never infinite) resources of the nervous system to resist or control. The bloodvessels dilate, and through their distended walls there occurs a migration of wandering cells, straying from their

[1] Section V., Nervous System, pp. 582–583.

legitimate paths (the bloodchannels) into the interstitial spaces of the body. These truant cells, like wandering socialists in the body politic, have taken advantage (so to speak) of a temporary defect in the government's police regulations; they have migrated beyond their lines, regardless of law, and have relinquished their normal industrial pursuits. But does the presiding nervous system take no note of this inflammatory "strike" among its industrial inhabitants? Most assuredly it does; otherwise order would never be restored, the inflammation would never subside, the patient never recover.

Let us here observe that a man with an extensive acute inflammation will have fever, thirst, loss of appetite, inability for mental effort and for muscular exertion, and pain in using the inflamed organ. But these inevitable attending phenomena are themselves produced and maintained in obedience to the silent decrees of the governing nervous system. The whole organism is prostrate; the man is disabled and almost as helpless as an infant. It seems as if the government, in permitting the observed phenomena to take place, were bent on suicide rather than on the conservation of the individual's life. And yet, if we view these phenomena understandingly, their conservative and beneficial influence is just as apparent as if the decrees of the nervous system were put down in black and white, something after the following manner, viz.:

Order No. 1. *To the Department of the Digestive Industries.*—The digestive factories will suspend work; appropriations of blood and nerve force for the digestive industry are withdrawn; they are needed to restore order over the inflamed territory. Let the sentinel, "Appetite," guarding the portal of the digestive system, announce: "*No solid food received.*" And it is so. The appetite is gone; no food is desired; none taken; none could be digested if it were taken.

Order No. 2. *To the same Department.*—The organism will be supplied with food that can be absorbed without digestion—a food upon which man can live longer without starvation than upon any other one of the proximate principles of food—a material entering largely into the composition of every tissue and fluid, and necessary for every excretion and secretion. It is *water.* Let the sentinel, "Thirst," proclaim: "*Water received ad libitum.*" And so it is; and the thirsty soul of the fever-stricken patient finds a luxurious enjoyment in every draught; and if the digestive tract cannot absorb enough, the sentinels upon the outer wall—the skin—cry out, "More water yet," and the patient bathes his heated body, and thus, enjoying another luxury, finds repose in the consequent reduction of temperature.

Order No. 3. *To the Department of Muscular Exertion.*—All work in this department is hereby suspended; its appropriations of blood and power are temporarily withdrawn, being needed elsewhere. Let the avenues of muscular effort be closed, and the sentinel at each gate proclaim the general order "*Rest.*" And it is so: the patient incapable of muscular work rests in his bed, like a child.

Order No. 4. *To the Departments of Intellection and Speech.*—All work in these departments is suspended and their appropriations cut off. Mental exertion, worry, anxiety and exciting emotions are forbidden. Conversation and argument are especially interdicted. Let the avenues of speech and intellection

be shut, and over their closed gates write, in the one case, "*Silence*," and in the other, "*Sleep*." And again it is so. The fever patient longs for quiet and repose. He is disturbed by every murmur of conversation; irritated by every question requiring reply, and is annoyed even by the rumble of a wagon upon the street.

So we might go on, almost indefinitely, adding order after order, and edict upon edict, which the presiding government of the nervous system silently prescribes, to conserve the integrity of the organism, to perpetuate its own existence, and restore order under the emergency of acute inflammation, with which it has been overtaken.

Leaving now these orders applicable to the general system, let us go to the seat of the inflammation itself and see what processes, strategies and tactics are here being carried on by the presiding government to quell this inflammatory insurrection of wandering corpuscles. How red the part is! What a tremendous appropriation of blood from the general treasury is being here expended! Every vessel is congested; every capillary gorged. What armies of cells are being here accumulated—one army of loyal individuals to crush out or remove the other army of disloyal wanderers. And if the individual live and the government of the nervous system maintain itself, what takes place? The disloyal cells are removed or destroyed in several ways. In some, their nutrition is cut off; they melt into a kind of milk, by fatty degeneration, and are absorbed as food for the general system. Others are arrested in their wanderings and transformed on the spot, not like Lot's wife, into a pillar of salt, but into fixed connective tissue cells; their further migration is suspended, and they remain imprisoned for life, embedded in the fibrous adhesions, cicatrices and indurations that are always left, like bones on a battle-field, after the inflammatory action is over.

In other instances where the hosts of disloyal cells are tremendously numerous, the processes inaugurated and carried on by the nerve government serve to collect these rebellious hosts together; they are driven to one spot; surrounded; a wall is built about them; they can no longer wander; they cannot escape. The whole mass of them is then extended farther and farther toward the surface of the body, until eventually an opening occurs, through which they are all at once unconditionally exiled and expelled. We call this the process of suppuration, and we witness it in every abscess that bursts and in every boil that breaks. And when the core of the boil is discharged, the core of the rebellion is crushed, and with almost instant relief to the individual.

Note now what takes place in obedience again to the edicts of the presiding system. The blood accumulated at the seat of inflammation returns to its old channels, and the industries of the digestive system are resumed. The former edicts suspending muscular and mental exercise are revoked. The man rises from his bed, weak from loss of nerve power, pale from expenditure of blood and lack of food. Thirst is gone, but the appetite is enormous. A rough loaf of bread in a baker's window appears delicious and makes the man's mouth water. He can hardly get enough to eat. The digestive industries are being resumed with double vigor to repair the loss occasioned by their suspension during the inflammatory process; the government resumes its normal administration, and health is restored by the natural processes, the ability to

execute which has been gradually acquired through long ages of ancestry. In the face of these beautifully conservative processes—these natural methods of restoration—at present so imperfectly understood and so seldom accorded practical recognition, how "dull, stale, flat and unprofitable" is the older creed of the medical art which believed in "curing" an inflammation with a box of pills!

Yet people die. The conservative methods of Nature appear to have failed, and the nerve government to have been deficient or erroneous. But is this any wonder when we consider how frequently the edicts of the nervous system are unrecognized, or disregarded, or even opposed and resisted by the attendants of the patient or by his own voluntary obstinacy? If instead of following the natural instincts which Nature has implanted in him, and which are made manifest to his *senses* by nerves coming directly from the presiding centres, he insist on opposing them; if he will persist in signing checks, reading documents, consulting with clerks and worrying over business and money; if instead of muscular rest he will still walk the street, stand at a counter, or ride in his carriage until almost ready to drop, when he longs to be in bed and knows and feels that is where he ought to be; if he still persist in taking food, perhaps by the persuasion of friends, which he does not desire and cannot digest; and if he refrain from water for which he longs, because it is prohibited by doctors and nurses who do not seem to know the first article of his constitution, then it is not the fault of Nature if he die. If the governed will not submit to the government, punishment is deserved and will come inevitably.

To crystallize what has now been said into definite statements, I conclude with the following propositions:

(1) The human body is composed of a multitudinous population of individuals, each working out its own destiny and welfare, but in doing so contributing to the welfare also of the body politic, of which it constitutes an insignificant unit.

(2) This population is under the direction of a presiding nervous system, which rules them for their own good as well as for its own benefit.

(3) The constitution of the organism, the foundation of its government and laws have been gradually acquired and inherited through ages of ancestry and an infinity of lower organisms.

(4) The presiding government, besides ruling the processes of health, regulates also the phenomena of disease and will conduct them to a favorable termination under specified favorable conditions; that is to say, *inter alia*, the diseased product must not be disunited from the body (like a calculus), but maintained in close communication with the governing power, and provided also that the inherited principles of the constitution be obeyed, and the edicts of the governing nervous system carried out to their designed conservative termination.

As with governments devised by man's contrivance, so with the government of the human body itself. To secure life, peace and prosperity in the one as in the other, the *union of parts* must be maintained, the *constitution respected* and the *laws enforced*. How to do this advisedly, in the treatment of disease, becomes of first importance to every practising physician.

HISTORY OF A CASE OF SARCOMA OF THE GENU OF THE CORPUS CALLOSUM, PRESENTING SYMPTOMS OF PROFOUND HYSTERIA: WITH AUTOPSY.

By Charles A. Oliver, M.D.,
Attending Surgeon to Wills' Eye Hospital, etc.

On the 18th of March, 1890, through the kindness of Dr. John H. Musser, the writer was permitted to study the ophthalmic symptoms of W. E. G. The patient was an extremely emotional woman, aged 43 years, who had complained of uterine disease (retroversion), dating from the birth of her last child, in March, 1886, the labor of which had been very trying and tedious.

She was small, emaciated, pale and anæmic; the mother of four living, apparently healthy children, the eldest of whom is an undeveloped girl of 17 years of age, who was conceived during much domestic trouble. The second child is 13 years of age and much smaller; she is also healthy, though very excitable. The third is a 10-year-old, healthy lad, who was born after a very difficult labor; whilst the youngest child is a fine, healthy boy of about 5 years of age. No family history of a similar trouble, insanity or blindness could be obtained; her ancestors being long-lived. Her father and mother, who were not blood relations, were married at about 40 years of age, raising a family of four children out of five births, the patient being the second born. Her mother curiously retained her maternal instincts for a much longer time than ordinary. Her father died at an advanced age, of chronic Bright's disease. On her husband's side, which has, however, no direct bearing on the case, there is a marked streak of insanity passing through a large, neurotic family.

In the early summer of 1887, whilst nursing her last child, symptoms of fatigue came on; the patient rose later in the morning, and, though active, it was difficult to make her promptly move about. No particular cause could be assigned for any of these peculiarities. In the hope of bettering her lassitude, she was taken to the country, where, though appearing quicker in motion when once aroused into activity, there were days in which she would remain in bed during the entire twenty-four hours. In the Fall she seemed much better. At this time, however, the sight of the left eye became primarily affected, compelling her to discontinue any fine applied near-work. In the spring of 1888, the sense of smell became disturbed, gradually failed at times altogether, and was lost one year later. The taste then grew erratic, all of her articles of diet requiring stronger and stronger seasoning to be considered palatable. No auditory symptoms were ever complained of during the whole course of her disease, although a manifest defect was recognized by clinical observation later in the history of the case.

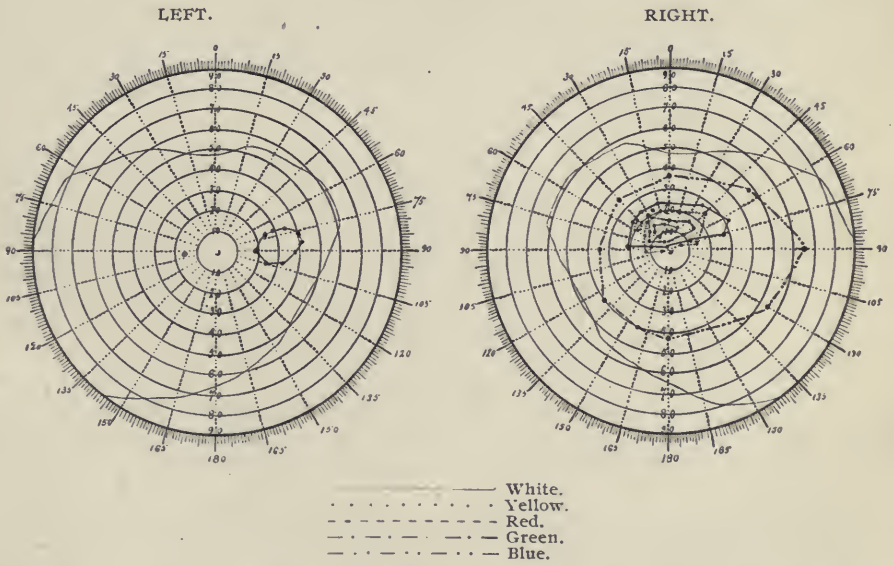
Gradually she took more and more to her room, until in December, 1889, she remained almost always in bed. In January, 1890, it was found that the vision of her right eye had begun to fail. In February of the same year, following a severe attack of flooding, Dr. R. M. Girvin was called to see her. At this time her whole mental condition changed. One night, soon after visiting the Zoölogical Garden and seeing a number of reptiles, which apparently affected her very much, she dreamed that she was standing beside her father in his barnyard alongside of a river, looking at a large pile of straw, when suddenly a great mass of large worms crawled from beneath, necessitating her utmost strength of body and courage of mind to build a fire around the rapidly increasing creatures and to throw them back into the fiery circle to keep them from spreading. She nursed this fire, watched it, worked at it

both by action and motion during the day and dreaming of it each night, until at last, in two weeks' time, during a dream, an opening appeared in the ground, from which an immense, alligator-like form came out and carried the reptiles off to the river, in which they were all drowned.

This was followed by indefinite multiplication of definite objects, as, for instance, one man would increase to several, each as clearly defined as his fellow; these in turn would multiply by hundreds until the street would appear crowded with similarly shaped and acting, life-sized figures. This multiplicity of single brain-images, each projected into a separate and non-conflicting space, lasted more than a fortnight. Immense animal-like forms such as "elephants" now came slowly and silently flowing in large, semiliquid-like masses over the neighboring houses, and forced their untouchable, long, sinuous, soft-like bodies into her room through the crevices and chinks of the windows. Whole rows of dwellings would noiselessly topple down, only to be mentally rebuilt by slow and deliberate determination.

The sensory illusions and hallucinations now began to increase; tactile disturbances became superadded to the visual peculiarities. Snakes and small reptiles became entangled in the hair on both sides of her head; caterpillars, lice, minute insects and fleas were both seen and felt crawling and hopping over her entire person; these leaving her in a little while, only to have the larger vermin control her body and reason.

In March, during Dr. Girvin's absence from the city, Dr. Musser attended her; at this time the writer first saw her. He found that central vision for form for the right eye, which could not be optically improved, equalled but $\frac{1}{50}$ ($\frac{4}{200}$), whilst that of the left eye was reduced to the perception of light in a small area to the nasal side of the visual field. No accommodation could be obtained. The pupil of the left eye, which was round like its fellow, was much the larger, whilst its iris was absolutely immobile to the strongest light stimulus



which could be projected from any meridian except in a small area to the nasal side, which probably corresponded with the field remnant. In the right eye, the pupillary reflex to light was sluggishly obtained to ordinary gas-light stimulus projected from a concave mirror, from both the nasal and temporal sides, this being more pronounced when the point of stimulus was situated in the lower meridian. Extra-ocular muscle motion, both in associated and disassociated action was normal. The fields of vision for the right eye, as shown in the accompanying sheet, which were carefully taken for green, red, blue, yellow and

white, showed the characteristic early fatigue of a badly-working visual apparatus, so symptomatic of hysteria.[1]

The eye-grounds, which, upon account of the wide dilatation of the pupil, were plainly seen over a great extent and area, gave the following conditions: In the right eye, the media were clear: the disc, which was vertically oval, was seven by eight diameters in apparent magnitude; its substance appearing somewhat grayed in the lower layers: a small errant vessel could be seen to the temporal side: the scleral ring could be discerned around the entire border of the disc, the temporal edge being tipped with a trace of pigment, and the nasal border being bounded by a crescent of blackish massing: whilst the vessels of the retina were normal in size, and seemingly carried properly tinted blood; the larger veins appearing rather tortuous. In the left eye, the fundus changes were more characteristic of intracranial disturbance: the disc was oval, seven by eight diameters, with its long axis at 105°: the scleral ring could be seen all around, it being more sharply cut to the temporal side of the nerve: a fine retinal striation existed, which veiled, but did not hide, the edges of the nerve-head: the entire retina was slightly puffed and swollen, giving it an œdematous appearance: while both the retinal arteries and veins were similar to those which were seen in the other eye. No other coarse changes could be seen in either fundus, and the refraction-error amounted to but one-half of a dioptre of hypermetropia in each eye.

She was again seen on the 15th of April, the ocular findings being the same as at the last visit, except that the vision of the right eye for form was momentarily increased to $\frac{1}{20}$ (double that of the first visit), but immediately falling to its old point. At this time, study was made of the condition of the sense of hearing, which showed that that of the right side was twice as strong as that of the left, the usual tests seeming to indicate intracranial mischief. The Gräfe tapping test failed to reveal any points of cranial tenderness. No evidences of word-blindness or word-deafness, so far as could be studied with the amount of sensory imperfection present, could be obtained. The patient failed to show any evidences of amnesia, or loss of faculty of language, in any of its forms. By careful examination, no disturbances of the functions of any portions of the motor apparatus could be obtained: neither were there any evidences of perversion of the muscular temperature or pain senses. Smell was lost, and taste had almost gone.

At this time, the mutability of the ocular symptoms; the characteristic fields; the absence of any expressive motor changes; the condition of the fundus oculi, in association with the mental derangements; the abrogation of the senses of smell and taste, which the patient's husband avowed had always become more pronounced just previous to the menstrual epochs; the ovarian tenderness; the large quantity of limpid urine without any abnormal excreta; the absence of cephalalgia, vomiting, vertigo, or any of the gross general symptoms of cerebral growth, and the constantly highly emotional condition of the patient, all tended a tentative diagnosis of profound hysteria, with the possibility of a gross intracranial lesion situated in the anterior base, to be given.

Upon the former supposition, the patient was estranged from her friends for a period of several weeks, after which conspicuous changes for the better appeared. She became more tractable and quiet, the illusions and hallucinations had almost gone, and she took daily walks instead of cuddling all day long on her couch or bed, and giving vent to piteous moans and lamentations. This betterment continued during the summer, until her return to the city in the first week in September, when, after seven days' time, she became weaker, refused to go out, and became more and more helpless, until at last, on the 14th of December, she suddenly sank into a state of coma, to abruptly rally on the 16th, and as quickly resume her comatose condition, never to recover—dying on the 21st.

The *post-mortem examination*, which was made forty-eight hours after death, by Dr. Henry W. Cattell and the writer, showed a body having the apparent height of 5 feet 5 inches, and weighing about 115 pounds. The face exhibited well-marked signs of recent illness,

[1] Any order of fields desired, though always occupying the same relative positions, could be obtained by commencing with some definite color, and continuing the examination in different sequences: the last color tried, if no proper interval had been given, generally giving the smallest and least certain area.

the features appearing pinched and anxious. As the autopsy was granted on the stipulation that the calvarium alone should be opened, the condition of the thorax and abdomen cannot, unfortunately, be described.

The skull cap was found to be of medium thickness. There were no adhesions of the dura mater to it. The longitudinal sinus was nearly empty. On removing the dura, the membranes were seen to be slightly congested, but showed nothing of especial interest. On attempting to detach the dura mater from the crista galli, it was found to be tense and strongly adherent. On introducing the finger, a roundish mass could be felt on both sides, which extended to the corpus callosum: this was worked loose without much difficulty, except from the body of the sphenoid bone, at which point it seemed to be quite firmly attached. Both the brain and the tumor mass were now removed without any damage being done to either of them.

The shape of the tumor is that of a half sphere hollowed in the centre, and having its greatest diameter of six centimetres in the lateral direction. The antero-posterior diameter measures five and a half centimetres. The depth at right angles from a line drawn from the highest point of the mass to the vertex is three and a half centimetres, whilst the greatest vertical depth is about one and a quarter centimetres less than this. In its anterior and inferior portions it is incompletely divided by a fissure into two nearly equal parts, and turns in upon itself like the rudiment of the knee of the corpus callosum. To the left of the median line, extending posteriorly, and lying beneath the optic chiasm, there is a small rounded projection. The optic nerves rounding this projection follow the convexity of the tumor to their entrance into the optic foramens.

The growth, which had its greatest bulk to the left of the median line, sprang from the knee of the corpus callosum and pushed the uncinate gyri far apart, causing great pressure upon the temporal lobes. It rested on the body and the lesser wings of the sphenoid, the orbital plate of the frontal and the ethmoid bones. Underlying the mass, the crista galli projected into the fissure found on the inferior aspect of the neoplasm. Both olfactory lobes were intact. Careful dissection of the entire cerebral mass failed to reveal any multiplicity of growth or any gross disturbance.

The posterior thirds of the ocular globes, both optic nerves, the optic chiasm, and a portion of the optic tracts, were removed for purposes of further study. Careful examination of over fifty sections, prepared for the microscope by Dr. Mary Morey, failed to reveal any gross changes except a slightly œdematous condition of the left opticus, the left intraocular nerve-head, and a small area of surrounding retinal tissue.

Microscopic section of a sliver of the intracranial neoplastic mass, by the late Dr. Charles Walter, of the Philadelphia Hospital, showed the adventitious growth to be a sarcoma of the spindle-cell variety.

REMARKS: This case is interesting, not only on account of its great rarity, and by reason of the grouping of the ocular symptoms being seemingly limited to those which are so eminently recognized as the ones found in some of the graver types of hysteria, but is valuable because of the want of the ordinary general symptomatic data which are exhibited by tumor-masses situated in other intracranial positions.

Springing from the anterior and inferior portion of the knee of the corpus callosum, and necessarily extending in the direction of the least pressure, it naturally, assisted by gravity, pushed downward to the bottom of the longitudinal fissure, where it at last involved the left opticus, causing want of proper conduction in that nerve trunk. At this time the growth had probably sufficiently disturbed the commissural fibres between the two frontal lobes as to give the first clinical evidences of mental sluggishness. The frequent exacerbations of gradually increasing anosmia, which first appeared six months later,

to become entire in one year's time, is most probably explained by downward and lateral pressures upon the cortex of the uncinate gyri. The peculiar and erratic attacks of gustatory anæsthesia which now ensued, and which persistently increased, offer some additional evidence at least to strengthen the belief of the existence of centres for taste situated in the meso-basal portions of the temporal lobes, just beneath the olfactory centres, upon which portions of the central cortex the tumor mass was found to have pressed. The want of voluntary subjective acknowledgment of auditory defect, which was only elicited —more particularly on the left side—by clinical demonstration late in the history of the case, can be well understood when the great distance of the acoustic centres from the seat of lesion is taken into consideration.

Curious and most interesting are the psychic groupings which now follow. Beginning after a great and sudden drain upon the vascular system, and precipitated by an intense emotional excitement, the entire mental condition changed during a sleep in which an active though irregular series of automatic impressions seemed to have been so pronounced that even after the return of the governing though impaired senses to consciousness, her mentality continued to persistently believe for more than a fortnight in its new and unreal world: this hallucination at last conquered, a most peculiar visual allusion appeared, where a single brain-image multiplied itself indefinitely without interference with the visual perception present at the time: new fantastic forms, commingled with another variety of visual illusion which could be slowly corrected by deliberation and will-power, now appeared; all of these latter, as can be seen by the clinical history, being limited to one avenue of sensory impressions alone—vision. To give answer to these aberrations of sight, two causative factors should probably be combined: one the stretching and consequent irritation of the optic nerves just before reaching the chiasm, by the neoplasm itself, which although, by reason of localized pathological changes, caused a loss of light perception in the left eye everywhere except in a small peripheral area, yet was not sufficient to disturb the entire visual field of the right eye, in which both the hallucinations and illusions were constantly projected: the other, which possibly consisted of a series of disordered concrete visual memory pictures or primary imperfect sensory impressions, wrongly interpreted by the disturbed mental centres.

The later superaddition of the universal paræsthesiæ to the visual phenomena, without any discoverable gross lesions of the temperature, pain and muscular senses, is most certainly of some consequence in the localization of the tactile centres.

The want of any gross generalizing pressure symptom at the times of examination, which can now be readily understood by the comparatively free position of the tumor mass; the many mental indications of functional neurosis which markedly lessened after proper environment; the changeableness of vision for form and color, and the peculiar psychical condition, all pointed toward some probable temporary changes in the cerebral cortex characterized by peculiar mental symptoms and sensory changes (hysteria); whilst the one completely obtunded sense (smell), the two more or less so (taste and hearing), the

fourth (sight), both weakened and irritated, and the last (touch), which continued paræsthetic almost to the end, gave additional evidence, though allowing the possibility of permanent gross intracranial lesion situated in the anterior base of the brain, to be properly judged by the losses of smell and sight from supposed trunkal pressure on the first and second nerves with involvement of frontal lobes.

The isolation of the case with the consequent betterment showed most conclusively the hysteroid nature of many of the symptoms, whilst the persistence of others strongly indicated permanent lesion; this latter belief being strengthened by the gradual mental hebetude and the death by coma which took place some three months later. Fortunately, through the kindness of Dr. Girvin, an autopsy was permitted, resulting in the finding of a single malignant growth in this most unusual situation.

REPORT OF A CASE OF MULTIPLE SARCOMATA IN AN INFANT.[1]

By Frederick A. Packard, M.D.,

of Philadelphia.

The following case is of interest from two facts in particular—the youth of the patient and the great number of the growths. The history as obtained from the mother when first seen, on February 14, 1890, was as follows:

C. K., white, male, aged 6 months, of native parentage. Family history is good, there being, with one exception, no manifestation of a family tendency toward tumor formation. His maternal great grandmother had several tumors of the scalp (probably sebaceous cysts). He is the second child, the first having died of "summer complaint" at the age of 15 months. He was born at full term, the labor having been easy and natural. He was, from birth, and is still nursed by his mother. Dentition has not as yet begun. Ever since birth he has been constantly fretful and uneasy. His sleep is restless.

At the age of 7 or 8 weeks his mother noticed two or three small lumps on the back. When first seen they were about the size of a pea and of a purplish color. Other tumors rapidly appeared in succession upon the head, right side and left side. The growths steadily increased in size; new ones rapidly appeared, the last being upon the soles of the feet. There has been no apparent tenderness. The legs always seemed weak, never being moved so freely or forcibly as were the arms. There have been no hemorrhages. The child has always nursed well and has had but little vomiting. There has been no evident interference with swallowing. The bowels are regular. He has been steadily growing paler and thinner. There has been no œdema. He is very restless, but does not seem to suffer pain.

Status præsens.—The child is thin and pale, being somewhat old-looking. The hair is sparse, the anterior fontanelle not entirely closed. Over the head, particularly near the vertex, there are several firm, well-defined subcutaneous tumors, freely movable upon the deeper tissues and not adherent to the skin. They vary in size from that of a marrow-fat pea to that of a small marble. They are of an obscure purple color. Tumors similar to these, except in size, are freely scattered over the whole body, without any geographical

[1] Read before the Philadelphia County Medical Society, March 26, 1890, and February 18, 1891.

distribution that could connect them with nervous, lymphatic or vascular paths. On the back and sides they attain to the largest dimensions, two of them being fully as large as a good-sized pullet-egg. One or two of the tumors are less freely movable than the majority and evidently have attachments to deeper tissues. Tumors are now present upon the head, all surfaces of the thorax, back, abdomen, thighs, legs and feet. They are not arranged perfectly symmetrically. There is no œdema. There is marked dyspnœa on crying, the whole thorax being drawn up *en masse*, the lower thorax sinking inward, and the thyroid cartilage moving with the respiratory acts. The cry is peculiar, being somewhat hoarse.

The chest is large, chiefly in the antero-posterior diameter, and is even more of a barrel-shape than is usual in children of his age. The circumference of the thorax at the horizontal nipple line is sixteen inches. There is no unilateral or local prominence, except for the subcutaneous tumors. Nothing further is learned from palpation. Percussion note is normal, except for possibly slight impairment of resonance in the interscapular region. On auscultation unaltered breath sounds are everywhere distinctly heard.

Examination of the heart negative. Pulses equal.

The pupils are normal and equal, reacting well to light. There is no ptosis or squint. No view of the eye-grounds could be obtained owing to the youth of the patient. There is evidently no blindness or deafness.

The legs are moved, but to a very slight extent and feebly. There is no local wasting of muscle groups, but both legs are equally small and flabby. The knee-jerk is exaggerated on both sides equally. No clonus could be obtained in any part.

Sensation is, so far as could be ascertained, unimpaired.

There is no sphincter weakness or spasm.

Thinking it possible that the tumors might be of leucocythæmic origin, the child was put upon minute doses of liquor potass. arsenitis.

On the next visit the blood was examined, showing 4,816,coo red blood corpuscles per cubic millimeter, one white to 144.5 red blood cells. The general condition seeming to be somewhat improved, the internal treatment was continued, and in addition the mother was given, by way of experiment, a prescription for an ointment of potassium iodide in lanolin, to be rubbed into a gland the size of which had been noted.

On February 26, the general condition had much improved, the child being brighter and the cry stronger. No effect was produced by the use of the ointment.

A small tumor was at this visit removed for examination from the left side. The tumor lay just beneath the skin, seemed to be lightly encapsulated, and was readily removed entire. It was found to be composed of numerous round, lymphoid cells infiltrating normal connective tissue. Examination of the urine negative.

On March 3, the general condition had still further improved, but the tumors were possibly somewhat larger than when he was first seen.

From this note until April 15, no marked change occurred, but the dyspnœa slowly increased. Upon the last-mentioned date I was hurriedly summoned to see the child. I found it cyanosed, with greatly labored inspiration and some paroxysmal struggling for breath. The breath-sounds were extremely feeble, especially posteriorly, where also there was marked dulness. The dyspnœa steadily increased until the evening of the following day (April 16), when the child died from asphyxia.

The following notes were taken at the autopsy, which was made thirty-six hours after death :

The body is emaciated, there being but little subcutaneous fat. The dome of the *diaphragm* was, on the right side, at the fourth interspace, on the left at the sixth rib. There was a very slight amount of clear serum in the abdominal cavity. *Retro-peritoneal lymph glands* normal. Two enlarged glands lie near the promontory of the sacrum.

On opening the chest the *thymus gland* is found to be large, covering the pericardium over almost two-thirds of its anterior surface in the median line. The gland is fully three inches long by one and three-quarters inches wide. It reached down to the level of the

sixth rib. Its color is more of a leaden hue than is normal; its lobes are distinctly marked, and in places there is a distinct feeling of induration in areas not larger than a buckshot. On section of one of these indurated portions it is found to be of a deep slate color, firm, homogeneous in appearance, and, while snugly embedded in gland tissue, does not shade off into healthy substance. The gland was not adherent to neighboring parts save by the normal amount of fine connective tissue.

The *pericardium* contained a little clear serum. Pericardial tissues normal. The *heart* is of a good color, and its surface is smooth. The left ventricle is firmly contracted. There is no manifest alteration in the size of the heart cavities, but the wall of the left ventricle is slightly increased in thickness. Both ventricles contained *post-mortem* clots, that in the right being pale and firm, and extending into the pulmonary artery. All of the valve leaflets are normal. The *phrenic nerves* were uninvolved, being clearly seen throughout their whole course to the diaphragm. Both *lungs* were partially collapsed. Anteriorly and laterally there were no pleural adhesions, but posteriorly on both sides the fingers came in contact with a hard, firm mass, tightly adherent to the inner surfaces of the ribs close to their heads and to the bodies of the vertebræ. The lungs themselves are of a mottled appearance owing to light, elevated patches of crepitant lung and liver-colored depressed areas of non-crepitant tissue. The liver-colored portions sink in water. In the visceral *pleuræ* are two or three small fat-colored masses of about 4 mm. diameter, freely movable with the pleural membrane and not apparently involving the lung parenchyma. Except for the atelectasis, which is most marked near the edges, the lungs show to the naked eye no pathological alteration. The *œsophagus* is free from involvement, although in immediate contact posteriorly with the hard mass described below. The arch of the *aorta* is free and its lumen unaffected. From it spring the usual number of arteries, likewise uninvolved. The descending portion of the arch and the thoracic aorta are seen running in a fissure between two lobes of the tumor mass, the exposed portion facing anteriorly and to the left. The growth almost surrounds the descending aorta behind to its inner side, to its outer side, and from the latter point partly covering in its anterior arc. On slitting up the aorta along the exposed surface the opening of the intercostal arteries are seen, the arteries themselves running directly into the tumor mass. The *pneumogastric nerves* are free throughout their whole length, running down in front of the mass. The right recurrent laryngeal nerve could not be found; the left wound around the arch of the aorta and was found to be free from involvement or pressure in its course up the trachea to the point of section above. The *tumor masses* in the thorax are agglutinated together but have distinct lobules. They are firm, almost cartilaginous, and of a deep purplish color, but faintly mottled with lighter red. The mass, as a whole, saddled the bodies of the vertebræ, from which it had to be forcibly separated. The whole tumor mass is of about the size of a large halved orange. On section the tissue is found to be very tough and on the cut surface shows in large areas what appears to be either hemorrhagic degeneration or deep melanosis. The bodies of the vertebræ were not eroded or softened, being perfectly normal in appearance. There was marked lateral deviation of the spine, the convexity being toward the right. The parietal pleura was smooth and normal in appearance. The antero-posterior diameter of the chest at its deepest part measured 78 mm. Springing from the ribs near to their angle (on the thoracic surface) were some sharp exostoses of a dark color, about which portions of the growth adhered on removal of the mass.

The *peritoneum* was normal, the organs of the abdominal cavity being in their normal position. *Vermiform process*, normal in appearance, about 4.5 cm. in length, and situated entirely back of the caput coli. *Mesenteric glands* uninvolved. *Spleen* large, firm and dark in color. Section shows nothing abnormal; surface smooth and glistening. *Ureters* and *bladder* normal. *Testicles* descended and not enlarged or indurated. Left *supra-renal capsule* is larger than an ordinary English walnut, firm, lobulated and of a generally rounded outline. It is of a purplish color, except for a narrow rim of greenish-yellow granular tissue that is evidently the cortical portion of the adrenal (See Fig. 1). The right supra-renal capsule is smaller than the left, but has otherwise the same characteristics. On section a thin rim of cortex is seen, with slate-colored firm masses in the interior

(See Fig. 2). The *kidneys* are normal, except for distortion of their general shape and flattening of their superior extremities. The *pancreas* is itself normal, but just at its tip is an enlarged yellowish gland. *Stomach* and *intestines* normal; *bile-duct* patulous. The *gall-bladder* contained a fair quantity of fluid bile. At each end of the viscus was a whitish nodule. *Liver* is large. In the notch are seen two enlarged hard nodules of a white color and resembling in appearance lymphatic glands. On the surface of the liver are seen numerous dark, slightly elevated areas, showing on section a slate-color, distinctly demarcated from the liver tissue. The parenchyma of the organ is of normal appearance, but scattered throughout various parts of it there are isolated white or slate-colored foci, varying in size from that of a small to that of a large pea. *Diaphragm* normal.

FIG. 1.

Left supra-renal capsule and kidney, showing bosses of sarcomatous growth.

Owing to the almost constant presence of the child's father but a small portion of the spinal cord could be removed, and in order to obtain the part most likely to indicate any spinal involvement by

FIG. 2.

Transverse sections of two portions of right supra-renal capsule, showing sarcomatous infiltration of medullary portion.

secondary changes, the lower dorsal and lumbar segment was removed. This showed to the naked eye nothing abnormal. The brain was not examined.

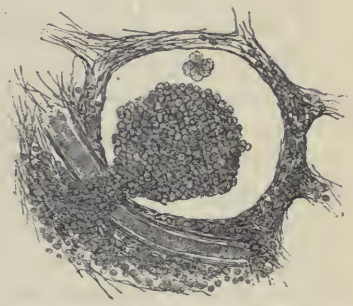
Microscopic examination of the various growths reveals the structure of *lympho-sarcoma* in all. The sections show numberless small, round lymphoid cells, staining brilliantly with borax-carmine.

In the section from the posterior-mediastinal growth there are two clearly defined areas, one composed of a delicate reticulum, enclosing and closely associated with innumerable lymphoid round cells, the other consisting of massed, red blood corpuscles, in more or less advanced stages of degeneration, with a few brightly staining lymphoid cells scattered about irregularly. In other portions there is an intermediate condition. Throughout the section are seen very many thin-walled capillaries; at one portion the collection of round cells is intersected by numerous connective tissue bands.

The nodule from the thymus gland is made up of a similar tissue, without hemorrhagic admixture, while in addition there are scattered among the lymphoid cells, bodies that appear to be remnants of Hassel's concentric corpuscles. There is apparently some faint attempt at separation between the tumor and normal thymus tissue, as shown by a fragmentary connective tissue layer, seen at some places between the normal and abnormal cells.

The sections of lung were cut from a block so removed as to include one of the pleural growths. The pleural surface is thickened in the neighborhood of the growth, and beneath it there is seen a mass of brightly-staining round cells having the same general arrangement as described above. The whole alveolar structure of the lung has a coarse, heavy appearance when viewed under a low power. This is found to be due to universal infiltration of the alveolar walls with tumor cells. Some of the alveoli contain a few exudation cells, while in others masses of tumor cells are to be seen, either lying loose within the space (evidently from the plane of section), or springing from the alveolar wall itself. In a few of the alveoli the tumor cells can be seen invading or pushing through the alveolar wall and projecting as polypoid masses into the alveolar space. This is shown in Fig. 3, which is somewhat diagrammatic, where the cell mass is seen covering in a vessel containing an old clot, and widening out as it enters the alveolus. All of the bloodvessels in this section were filled with blood.

FIG. 3.

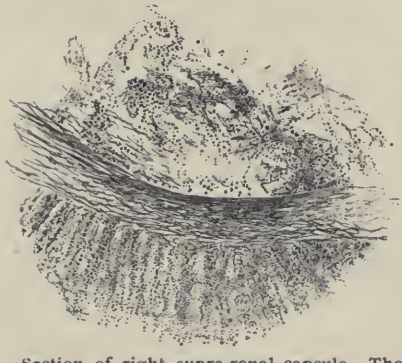


Section of lung, showing polypoid mass projecting into an alveolus (Hartnack, oc. iii, obj. 5). Reproduced on a small scale.

In the liver the parenchyma cells lying near the tumor nodule are poorly outlined, crowded together and take the stain (borax-carmine) badly. There is much connective tissue within the tumor area, among the meshes of which are scattered masses of the same brightly staining cells as occur in the other organs. Here there are, in addition, many very minute, brightly staining, round cells, such as are not seen in other nodules, and which are about one-half the size of the more predominent cells.

The supra-renal capsule (the left only being examined microscopically) consists of two distinct portions (Fig. 4), an outer, dense-looking, narrow rim, enclosing a spongy-looking material, taking a deeper stain. The outer layer, under higher power, is seen to be the normal cortical substance of the capsule. This is separated by a wide band of connective tissue from a loosely arranged collection of brightly staining, small, round cells of a somewhat alveolar grouping, and intersected by numerous lines of fusiform cells in single rows or strands. A moderate number of thin-walled bloodvessels run through the masses of mingled cells and loose connective tissue. In a few places the lymphoid cells have somewhat the general radiating arrangement of the cortical layer.

FIG. 4.



Section of right supra-renal capsule. The cortical portion is seen to be separated from the sarcomatous tissue by a broad band of connective tissue (Hartnack, oc. iii, obj. 3). Reproduced on a small scale.

On taking into consideration the much larger size of the mass in the posterior mediastinum, as compared with the nodules elsewhere found, as well as on

thinking of the fact that the only growth that had taken on any degenerative change was in that mass, the primary seat of trouble would seem to be at that point.

On looking over the records of previously reported cases of tumor of the posterior mediastinum one is struck with the extreme latency of even large growths in that situation; it is probable, therefore, that this was in fact the origin of the other tumors; yet I cannot help thinking it possible, in view of the early age at which the growths were first noticed beneath the skin, that the whole cell organization of the child may have been at fault, and that, instead of the nodules scattered so profusely in such diverse organs of the body being secondary to any one primary growth, they were all merely a part of such perverted formation. This suggestion, I admit, is in the highest degree theoretical, but I should be glad to hear expressed the views of the members as to its probable value.

After an exhaustive search through all of the reported cases of mediastinal tumors, I have found but a single case occurring at so early an age as the one now reported. This case was reported by Charon and Ledeganck[1] in 1878, as "a case of congenital sarcoma of the face, with miliary tumors of embryonal connective tissue in subcutaneous tissues, pleura, mediastinum and pericardium," the child dying on the twentieth day. Whether this case was sarcoma or not is not clearly stated, but probably was so. The next youngest previously reported case that I could discover is one shown by Angel Money[2] to the London Pathological Society in November, 1888. In brief, this was from a child who began to lose flesh at the age of 6 months, cough with dyspnœa and cyanosis appearing six months later. At the autopsy there was found a round-celled sarcoma in the posterior mediastinal space, no other nodules being found in the body.

Out of the forty-eight cases of mediastinal sarcoma, collected by Hare in his Fothergillian prize essay, none occurred in children under 5 years of age.

Jacobs,[3] in 1873, showed to the New York Pathological Society, a mediastinal sarcomatous tumor, removed from a child, aged 4 years, where no metastasis had occurred. Douglas Powell[4] says that out of six cases seen by him, the youngest was 6 years old, while Hertz[5] states that Eger, in fifty-five cases, found but one below the age of 10 years (precise age not given).

While numerous cases of congenital primary sarcoma of the supra-renal capsules have been reported, I have been unable, in any case, either in adult or child, to find one recorded case of mediastinal sarcoma with metastasis to that organ. Secondary sarcoma of the adrenals would seem, from my investigation, to be rare. The only case that I found in a somewhat superficial search for records of secondary sarcoma of these organs being one reported by Butlin,[6] as a case of sub-periosteal spindle-celled sarcoma with metastasis to the supra-renal capsules.

Recently I have read in one of the journals a report of a society's proceedings, in which many cases of primary congenital sarcoma of the adrenals were reported. Although I made a note of this fact, I very carelessly neglected to

[1] Bull. de l'Acad. Roy. de Méd. de Belgique, 1878, t. xii, p. 548.
[2] British Medical Journal, Nov. 10, 1888.
[3] N. Y. Medical Record, April 1, 1873.
[4] Reynolds' System of Medicine.
[5] Ziemssen's Cyclopedia of the Practice of Medicine.
[6] London Lancet, Aug. 7, 1880, et seq.

attach the name of the journal in which it occurred, nor have I been able to find it again.

Finally I must express my regret at not having seen, before the death of this child, the account of a case reported by Dr. Heinrich Köbner,[1] of an 8½-year-old child, with multiple subcutaneous spindle-celled sarcomata, a cure having been obtained by the bold use of Fowler's solution of arsenic by hypodermic injection. Had I heard of it in time I certainly should have tried the method in this otherwise hopelessly fatal case.

HEADACHE—ITS VARIETIES.[2]

By Francis X. Dercum, M.D.,

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Gentlemen: I am glad that you have selected the subject of headache. There are few subjects which present so many obscure points. The term headache simply expresses a symptom; it means head-pain, and that is all. Head-pains are of very varied origin, as a little reflection will convince you. The pain may affect different structures. The membranes of the brain, especially the dura, the skull and the scalp, are at various times the seats of this pain which we call headache.

Organic Headaches.

Headaches naturally fall into two great groups—headaches due to organic causes and headaches which are non-organic. Headaches due to organic causes are such headaches as would be produced by a tumor, by an exostosis within the cranium, by a depression of bone irritating the dura, or by an inflammation of the dura itself. An organic headache, therefore, would be one associated with a demonstrable lesion. The organic headaches are very readily separated from the non-organic by the fact that they are apt to persist steadily, from day to day, with very little variation. They are practically continuous. Further, they are very likely to be associated with other very pronounced symptoms. Let us take brain tumor as an instance. In brain tumor, we almost always have headache if the tumor impinge on the membranes. If, however, it be within the brain substance and not large, headache may be absent. Now, for some reason not yet understood, we have associated with tumor inflammation of the soft membranes—the pia and arachnoid—and this inflammation extends to the sheaths of the optic nerves and gives rise to the intra-ocular appearances which are known as optic neuritis or papillitis. The older ophthalmologists explained this by the fact that the tumor increased the intra-cranial pressure, an explana-

[1] Berlin. klin. Wochenschrift, 1883, p. 21.

[2] A Lecture delivered January 31, 1891, before the H. C. Wood Medical Society of the University of Pennsylvania.

tion shown by many investigations to be alone unequal to an adequate understanding of the intra-ocular changes. Whatever be the explanation, the fact remains that organic headache is apt to be associated with eye symptoms. There are also liable to be general symptoms such as some affection of motion or sensation, or there may be symptoms indicating focal disease of the brain.

Then in organic headache there are, at times, associated brain symptoms. There may be, as in syphilitic meningitis, at times excessive tendency to sleep, or there may be symptoms showing marked brain irritation, maniacal excitement, delirium, or, more commonly, more or less marked mental failure. All of these symptoms may, however, be absent. Headaches of organic origin are usually not difficult to diagnosticate. The only case in my experience in which there was difficulty was a remarkable one. There was, as was shown *post mortem*, a marked hemorrhagic meningitis of the vertex. In this case the headache was persistent, some days a little better, some days worse, but always present. It was, however, not associated with eye symptoms. The explanation of the absence of eye symptoms was that the affection was limited to the vertex and was not very extensive. Often, however, with vertex affections, there may be eye symptoms. The fact that the headache was persistent led to the view that it was of organic origin.

The points in favor of organic headache are, therefore, constancy of the pain, associated eye or motor or sensory symptoms, and, at times, localization of the pain or even tenderness on percussion.

Non-organic Headaches.

The non-organic headaches fall naturally into a number of subdivisions, which we will consider in turn.

Migraine.

In the first we have a headache which is called migraine, the word being a contraction by the French of the word hemicrania. It differs altogether from other headaches. It is distinguished from ordinary headache by the fact that there is invariably more or less sympathetic nerve disturbance. This disturbance may be little, it may be great. Further, migraine is preceded, in the vast majority of cases, by a distinct aura. It has a signal symptom just as we have a signal symptom in epilepsy, although it is a prodromal symptom which lasts much longer. It may be varied in character. Most frequently a person suffering with migraine will experience eye symptoms, and he will experience them while feeling perfectly well. He may notice little zigzag lines of light dashing across the field of vision, or limited, perhaps, to certain portions of the field. These may persist for a fraction of an hour, or possibly an hour, or even longer. Experience soon teaches the individual that this means that he is going to have an attack of headache. The eye symptoms may be quite remarkable. Every now and then the attack is preceded by hemianopia. Either the right or left temporal field of one eye and the nasal field of the other eye become blind. Frequently the blind area, which is not as sharp as in organic hemianopia, has an outline of zigzag vibrating lines of light.

In other instances the aura is even more remarkable. Attention was first

directed to this by Dr. S. Weir Mitchell, who noticed that some patients had hallucinations of sight always affecting certain areas of the visual field. One patient always saw a relative, who had died some time previously, standing at her side. The vision would retreat as the head was turned, always keeping at the same angle. This lady soon learned that this meant an attack of headache. Drs. Mitchell and de Schweinitz described several other cases, among which was a patient of my own, a married woman, 35 years of age, who has had several children. While alone in her room she will see two of the children at her right side. So natural is the illusion that she turns her head to look at them. She has learned to know that this means that a headache is about to come on. This strange condition still persists.

There are also other prodromal conditions. One of my patients, a middle-aged lady, was always in excellent spirits preceding an attack. She would be bright, vivacious, talkative and brilliant, and every member of the family would at once recognize that she was going to have a headache. Sometimes the opposite condition, that of depression, precedes the headache. Disturbances of hearing, taste and smell are never to my knowledge present as prodromal symptoms in migraine.

The attack itself presents the following striking peculiarities: The patient suffers from one of two conditions, marked either in the early part of the attack or after it has been somewhat advanced. In the first form the face is flushed, and the pupil of the affected side is contracted. This is undoubtedly due to paralysis of the sympathetic of the affected side. The face is also comparatively warm. It is sometimes bathed in perspiration. This, as a rule, lasts for several hours, becoming less marked as the pain disappears. In the second form there is, instead of paralysis, excessive stimulation of the sympathetic nerve of the affected side, and the skin is blanched and the pupil dilated. This condition persists during the greater part of the attack. Here we have features which are more or less decided and enable us at once to distinguish migraine from ordinary headache. The migraine attack may pass away simply by the pain becoming less and less, the patient going to bed and sleeping it off, or it may be relieved by vomiting. The latter termination is so frequent that it is ordinarily spoken of as "sick-headache." Migraine recurs at irregular intervals.

Migraine may, therefore, be differentiated from other headaches by the one-sided character of the attacks, by the sympathetic nerve disturbances, which are, however, not always very marked, and by the presence of the prodromal symptoms.

As regards the seat of the pain in megrim we know that the sympathetic is not a nerve that suffers much pain. The pain must, therefore, be really in the terminal distribution of the fifth. The latter nerve supplies not only the greater portion of the scalp and face but it also supplies the dura, and we know that pain in the dura is pain in the fifth nerve. All head-pains must, therefore, be relegated more or less to the distribution of the fifth. It must be that in migraine the sympathetic modifies the nutrition and other processes in the region supplied by the fifth. In the superficial occipital headaches the fifth is not involved, for here we have another nerve supply. When I say terminal distribution of the fifth nerve, I mean, of course, the tissues supplied by this

nerve and not the branches of the nerve. In typical headache, involving the nerve-trunk, as in malaria, you have tender points over the nerve-trunks showing that the nerve is decidedly involved. In migraine you have no tender points, but the pain is a diffused one.

Headaches of Anæmia and Hyperæmia.

In the second subdivision of non-organic headaches, we have, first, slight nutritional disturbances in the distribution of the fifth, which give rise to vague, dull and diffuse and sometimes constricting pains. Such, for instance, is the headache which occurs in cerebral anæmia, or the headache which we have in the opposite condition, cerebral hyperæmia. The headache of anæmia is, of course, associated with the general symptoms of anæmia or, at times, the symptoms of chlorosis. It may, in addition, be associated with other symptoms, such as those of neurasthenia, indicating a generally weakened nervous system. The headache of anæmia is apt to recur frequently, is of a dull and persistent character, and never reaches that climax or acme of suffering which we have especially in sick-headache. In migraine, the headache grows worse and worse until the climax of suffering is reached, when, by some crisis, as vomiting, the pain is relieved. These remarks apply also in a general way to the headaches of hyperæmia. Associated symptoms will enable you to recognize headaches due to hyperæmia. The hyperæmia is of two kinds—arterial and venous—but I shall speak of these conditions later on.

Diathetic and Toxic Headaches.

Next to these comparatively simple forms of headache due to anæmia or congestion, I shall speak of the headaches which are produced by disturbances of nutrition from diathetic and toxic causes. In the headaches from diathetic causes we have, of course, such common and such persistent forms as the lithæmic and gouty headaches. I know of no condition which is more difficult of treatment and no condition which is more persistent than the headache due to gout. In a number of these cases it is difficult to decide whether you have migraine to deal with or irritation of the meninges due to a deposit of urates. In the majority of cases there can be no doubt that the trouble is due to a direct irritation of the meninges. It is exceedingly common for persons with a gouty history to have also a neurotic history, and you will find that patients who have these gouty headaches also have a general history of headaches in their ancestry. A German writer, whose name escapes me, found in one of his patients that during the headache the urine was markedly deficient in urates and uric acid, and that as the headache subsided the uric acid constituents increased in amount. Remember, also, in attempting to make the distinction between gouty headaches and migraine that your patient may suffer with both affections. It is not uncommon to find patients who have true gouty headache and also true attacks of migraine.

Next, we have headaches of rheumatic origin. These differ very much from gouty headaches. In the first place, headaches that are directly due to rheumatic irritation of the meninges are generally headaches that occur during the acute attacks of rheumatism itself and are frequently associated with deli-

rium or with other signs of mental excitement or disturbance. The ordinary rheumatic headache much more frequently attacks the fibrous tissues external to the skull. We have, for instance, extensive aching, of which an important feature is tenderness of the aponeurosis of the occipito-frontalis muscle, and also tenderness over the insertion of the trapezius in the occipital region. These rheumatic headaches are generally easily diagnosticated, because they are frequently associated with other signs of rheumatism. The person who suffers a great deal from rheumatic headache frequently has muscular rheumatism, and rheumatism of a subacute or chronic character in the fibrous tissues about the joints as well.

Next, under toxic headaches, come headaches of uræmic origin. These headaches are, of course, associated with general symptoms which you would be likely to detect. The thing which we all do as a matter of routine is to take the patient's wrist and feel the pulse. In a large number of these cases you will find that the pulse is hard and more resistant than normal. The tension is higher. If the person be somewhat advanced in life, the vessel may be decidedly atheromatous. You will, therefore, be attracted to the condition of the heart, and that would in turn suggest examination of the urine. In all headaches which cannot be explained by other causes, the urine should be examined. In fact, in cases of headache, the examination of the urine should be a matter of routine. The character of the uræmic headache is different from that of other headaches. It is described as of a dull, heavy character, and is frequently associated with some obtunding of the faculties, and often with a little dulness of hearing.

We also have, though not frequently, a headache occurring in diabetes. It is, of course, associated with the other symptoms of diabetes. Its presence is always of serious significance, as it not infrequently portends diabetic coma and death.

There is sometimes associated with syphilis a headache, which is not due to direct inflammation of the membranes, but which in some way is associated with the general blood poison. In these cases there is no special syphilitic deposit or inflammation of the membranes. They are relieved by the iodide and are apparently due to irritation of the membranes. Syphilitic headaches, associated with true gummatous deposit or specific meningitis, of course come under the organic headaches.

Among other purely toxic causes we have malaria. The malarial headaches distinguish themselves from other forms of headache by the peculiarity of other malarial affections—namely, that of recurring at tolerably regular intervals. Malarial headaches may be general and widely-diffused headaches, but, as a rule, and for some unexplained reason, they affect especially the frontal region of one side, so that the disease has come to be spoken of as "brow ague." During the attack it is found that the supra-orbital nerve of the affected side is very sensitive. If, in a case of brow ague, you put your finger over the supra-orbital notch, although you may not make much pressure, the patient will flinch and even scream. If you roll the nerve under your finger, you will find that it is swollen. Normally, you cannot feel the nerve. I have frequently felt the nerve in patients with brow ague, especially in thin individ-

uals. These malarial headaches are usually easy to diagnosticate. They are headaches occurring at intervals more or less regular, and affecting preëminently the brow and one side only.

We may have headache due to the action of other poisons, such as alcohol. The alcoholic headaches are of two kinds. We have the chronic alcoholic headache, which is probably due to some change in the membranes. We know that in making *post-mortems* of chronic alcoholics, we are apt to find the pia opalescent, and along the veins we find little white strips where exudation of leucocytes has taken place. It is not improbable that the dura also suffers thickening or chronic irritation in chronic alcoholic poisoning. The second form of alcoholic headache is that which follows a debauch, and due not so much to irritation of the membrane as to overdistention of the sinuses. Alcohol produces an intense hyperæmia of the brains and membranes. That is probably one explanation of the pleasurable effects of alcohol. It stimulates the heart and makes the brain hyperæmic, and probably has some specific effect upon the nerve protoplasm. Following the hyperæmia, there is a venous stasis or congestion, and the sinuses become overdistended, and the pressure causes a decided, dull, heavy headache.

We have other toxic headaches. We have the condition known as lead encephalopathy. Fortunately, this is rare. I have myself seen but two cases of lead encephalopathy. These cases are associated with other symptoms due to the presence of lead. The patient is apt to have epileptiform seizures, and sometimes there is dementia. In addition, there may be wrist-drop, lead colic or the blue line on the gums. You must judge of the significance of head-pain by the presence or absence of other symptoms.

Then we have headache following exhaustion of the brain by such stimulants as tea, coffee and other nerve stimulants. If the brain is thoroughly exhausted by the over-use of nerve stimulants, there is, for some reason, a nerve pain, probably in the membranes. It appears to be really a neuralgia of the terminal distribution of the fifth nerve in the dura.

Reflex Headaches.

Having considered the great group of sympathetic headaches, those due to purely functional disturbances, as anæmia and hyperæmia, the various diathetic headaches and the toxic headaches, we come now to another important group—that is the group of headaches of reflex origin. Suppose that you have decided in your mind that a case is not one of megrim ; that it is not a congestive headache, as it does not occur in a plethoric subject ; that it does not occur in a chlorotic girl, or in a patient with excessive anæmia ; you have searched for diathetic causes and for other symptoms of the various diatheses ; you find no toxic cause, and you narrow the headache down to one of possible reflex origin. Headaches of reflex origin, or sympathetic headaches, as they are sometimes called, are, in the vast majority of cases, due to some ocular defect. Eye headaches are headaches in which the pain is felt over the brow. Some of you have experienced these yourselves. The pain does not spread to the vertex, but usually remains in the neighborhood of the orbit. Very frequently, however, it is reflected to the occiput. Examination of the eyes in these cases will probably reveal astig-

matism or muscular insufficiency. If these defects cause the headache, their correction will relieve the pain. It is not possible to make a diagnosis of the cause of a headache in every case at the first examination. Many cases must be studied for a long time before you can absolutely decide to what the headache is due.

We may in the next place have headaches of nasal origin. No affection is more common than abnormalities of the nasal chambers. A large number of persons suffer with hypertrophies of the middle and inferior turbinated bones. If the hypertrophy be marked, the hypertrophied bone presses against the septum, and the individual does not feel pain in the nose, but feels pain elsewhere, although he may suffer discomfort from not being able to breathe properly. The pain may extend over the malar region, over the temporal region, or along the frontal region to the vertex, on the side on which the hypertrophy exists. Examination would show whether or not there was hypertrophy. If a probe is passed and the hypertrophied parts be touched ever so gently, the chances are that the headache will be made worse. Again, pressure on the nose over the affected side from the outside, or pressure on the inner wall of the orbit, will give rise to increased pain.

Another form of reflex headache is the gastric headache. Very frequently gastric headache is confounded with migraine. A patient with migraine, however, may have a normal stomach. A person, the subject of ordinary gastric headache, is apt to have signs of chronic gastric catarrh. There is apt to be a coated tongue, tenderness over the epigastrium, eructations of gas and frequently of acid substances, and there is often heartburn. These gastric headaches are invariably relieved by vomiting, and, as a rule, the patient vomits fluid that is intensely acid. This is a peculiarity of reflex gastric headaches. They do not have the one-sided character of migraine, but have a diffused character. They generally affect the brow and vertex.

We have next headaches which are not very common—headaches which are related to cardiac or pulmonary conditions. I merely mention these headaches because it must suggest to you that where you fail to find a cause, you must continue the examination. Examining the heart, you may find hypertrophy or dilatation, or there may be slight valvular affection. In such cases, if proper attention be given to the hygiene, and suitable treatment be employed, the headache will be relieved. Headaches of pulmonary origin are always obscure. I do not make a special point of them here. In phthisical subjects we have headache from exhaustion and anæmia. The typical pulmonary headache occurs in commencing pneumonia or congestion of the lungs.

Then we have a common form of headache which is due to disease of the uterus or its appendages, and is also reflex. This is almost always a vertex headache, situated on the top of the head and relieved by pressure. If you find a headache which is vertex, which is more or less constant, and which has the peculiarity of being relieved by pressure, the patient habitually using the hand to relieve the pain, your attention should be directed to the uterus and ovaries. This form of headache is quite common.

We have also headaches due to affection of the bowels. Headaches from constipation are frequent. The headache of constipation is reflex and is relieved

by having the bowels opened, even if the laxative be not such as to produce marked revulsion. If a cathartic, simply sufficient to unload the bowel, is given, the headache is relieved.

I might also include hepatic headache. I enumerate these various headaches more particularly to impress upon you the necessity of always looking for the cause. Explore the patient from head to foot. That is the only way of making a reputation as a diagnostician. No organ should be left unexplored. The condition of the heart and bloodvessels, the condition of the kidneys, the condition of the liver, of the bowels and stomach, and, if the patient be a woman, of the generative organs. In that way very little is apt to escape one.

Hysterical Headaches.

There are other headaches which I shall consider briefly. We have the so called hysterical headaches. These are neither headaches of nervous exhaustion nor headaches of cerebral anæmia. The headache which comes on in nervous exhaustion, and which may be included probably with the headaches of cerebral anæmia, is dull and diffused, and at times associated with a sense of constriction or "gone" feeling in the head. The hysterical headache is generally marked on one side, but is accentuated in one spot. It may be in the parietal region or near the vertex. The patient will frequently use this expression: "It feels as though a nail were being driven into my head." You will find on exploring the scalp that while you may press firmly on all other regions, yet when you press on the spot in question it causes great pain. No one has yet given an explanation of hysterical headache. It is one of those curious and anomalous features which hysteria presents. There can be no doubt that the hysterical headache is a real headache—that it is a genuine pain. You cannot decide how great the pain is, but the probability is that there is decided suffering, just as hysterical anæsthesia is a decided anæsthesia. It is a real condition and not feigned. The great mistake usually made is to imagine that hysteria is feigned, and that hysterical patients are necessarily malingerers. This is not by any means necessarily the case. In fact, in profound hysteria it is not the case. The condition of hemianæsthesia, hemiplegia or local palsy is true and absolute so far as the patient is concerned. The same is true of the headache. It is one of those curious things which we cannot satisfactorily explain.

Lastly, we have the headaches which are symptoms of the various febrile disorders. It would not take you long to decide what such a headache was, for the simple reason that the headaches which occur in the prodromal stage of the various fevers are accompanied with other symptoms. The man who has a headache in the prodromal stage of smallpox will also have a terrible backache and aching in the limbs and will say that he feels bad all over. The headache is not the most marked feature. It is only one of the features. I simply allude to these headaches to cover the ground in general. The headaches which are symptomatic of various febrile disorders, especially the exanthemata, are associated with other symptoms which suggest something wrong with the patient as a whole. If you examine the pulse and temperature it will put you on your guard.

Treatment.

We come now to the treatment. This is an exceedingly knotty question. I shall not spend time in the consideration of the treatment of organic headache. I can indicate only general principles. If there is a tumor, it should be removed if possible. If there is meningitis, it is to be dealt with on general principles. If the patient bears the iodides and mercurials well, they should be given, while at the same time counter-irritation should be practised. Especially is this treatment applicable in headache following sunstroke.

A great deal might be said in regard to the treatment of the cases that belong to the group of migraine. In the first place, the patient should be put on such constitutional treatment as will improve the general condition and bring it up to a high standard. Every error of diet should be eliminated, not because the patient has gastric catarrh, but because he suffers with migraine. These patients should be given large amounts of milk in addition to other food. The food given should be in a digestible form. Exercise is another important factor. This should be rigidly insisted upon. However, in spite of what you do, although the attacks may be less frequent, it is improbable that you will be able to stop them altogether. I do not say that this is invariably true, but it is so in many cases. In addition, it is necessary to practise some decided interference at the time of the attack. One plan is to use morphia. Of course, that is a decided way of dealing with pain due to any cause. This is, of course, a dangerous method of dealing with pain, especially where there are recurring attacks, for the patient inevitably acquires the morphia habit. Again, especially where the migraine is associated with sympathetic spasm, the pain is often relieved by large doses of whiskey, especially if it be given hot. Various drugs have in recent times been given, not only for migraine, but also for other head pains, notably antipyrine and antifebrin. Antipyrine is a very valuable drug, and is a decided addition to our armamentarium. In some way or other the notion has got abroad, and is held by many people, that antipyrine is a dangerous drug. An ordinary individual will stand ten, fifteen and even twenty grains without noticeable effect on the heart or pulse. Antifebrin is a dangerous drug, and should not be given in large doses. Antipyrine, however, only exceptionally acts as a depressant. A good plan is to associate the antipyrine with bromides. The depressing effect, if any, can be prevented by giving digitalis, or especially by aromatic spirits of ammonia, which is acceptable to the stomach in this condition. Cannabis indica also enjoys a reputation in the treatment of migraine, and a just one. One-fourth to one-half a grain of the extract may be given at intervals of four hours.

In the treatment of functional headaches, due to anæmia or chlorosis or to hyperæmic states, general principles, of course, must guide you. The anæmic patient needs the best hygiene, and especially does he need iron. He requires the most nutritious diet. The headache of chronic nervous exhaustion and neurasthenia may also be spoken of here. The only way in these cases is to put the patient to bed for a while. Forced feeding, especially with milk, massage and faradization will cause improvement in the general health, and the headache will disappear. You may treat some of these cases in other ways, but you will make

no impression on the headache until you put them to bed. If you make the diagnosis that the headache is due to neurasthenia, do not hesitate to tell the patient of the necessity of rest, else you will fail in relieving the headache, and your reputation will suffer.

The headaches due to disorders of nutrition, as the various diathetic headaches, will call for their special treatment. The uræmic, rheumatic and diabetic headaches suggest what is to be done. The same is true of the toxic headaches. I shall here refer to one point only, and that is in connection with the malarial headache. This is not, as a rule, relieved by ordinary doses of quinine, such as would prevent the recurrence of a chill. If you do not give large doses, you will fail. Twenty and even thirty grains are required to make an impression. Where it is necessary to give very large doses it is well, in order to avoid irritation of the stomach, to give the drug in ten-grain doses in capsules every hour with a quantity of milk, until the required amount is taken. In that way the quinine will dissolve slowly in the presence of the curds of the milk, and there will not be much irritation of the stomach. In order to obtain the best effect the remedy should be administered four or five hours before the expected attack.

In regard to headaches of reflex origin, each case will require its appropriate treatment. The eye, nasal and gastric headaches suggest their respective treatment. Gastric headaches are due to chronic gastritis, and the treatment should be directed to the relief of this condition. Do not let yourself be turned aside from the proper thing to do by dabbling with pepsin and other digestants. Put the patient on a bland diet, give him nothing but milk, perhaps with a few crackers, or stale bread. To this possibly may be added beef juice from time to time. If he will consent to give the stomach a rest he will recover. This is the most important part of the treatment. Nitrate of silver is also of service. One-fourth of a grain of nitrate of silver, with hyoscyamus or belladonna, may be given thirty minutes or an hour before meals. It should be swallowed with as small a quantity of water as possible. Even if there be formed, as some assert, an albuminate of silver, there can be no doubt that the drug has some alterative effect upon the stomach. It probably acts as a stimulant and a sedative. It is probable that it rapidly undergoes chemical change, but we know that cases improve more rapidly with silver than without it. During the attack of headache it is well to give an emetic, and preferably one that will not irritate the stomach. You would not, under these circumstances, think of giving mustard. You could give the patient warm water until he could retain no more. The moment vomiting takes place the headache is relieved. The vomiting should be followed by the administration of an alkali, such as bicarbonate of soda, soda mint or a tablespoonful or two of lime water in ordinary water.

If you have an obscure headache, for which you can find no obvious cause, and you detect physical signs of cardiac disease, you must take this into account. Do not forget, further, the part that the bowel may play in the production of headache. Uterine headaches will require their special treatment.

Hysterical headache is among the most difficult to treat. Here again general principles must guide you. You must treat the hysterical patient as a neurasthenic patient. It so happens that in hysteria we almost always have

neurasthenic symptoms. In order to show you the role that neurasthenia may play in hysteria, I will cite a case from my own experience. I had under my care, some years ago, a young woman who was undoubtedly hysterical. Otherwise she was apparently in good health. She had a good color; she was not anæmic. She was a rather plump woman of about 20 years, but certainly hysterical. She was placed in bed and upon the rest treatment, but, owing to the interference of the mother, it was not carried out as well as it might have been. Instead of improving she got worse, and after a time typical hemianæsthesia appeared. With this there appeared some thickening of the epithelium on the affected side. Then the fine hair, which is found on the arms and legs, became exceedingly brittle, so that in sweeping the hand against the hairs, they would break off. In addition, she finally developed keratitis, and eventually lost the sight of the eye upon the anæsthetic side. I merely cite this case to show how profound hysteria may be and how marked the neurasthenia, which frequently accompanies hysteria, may be.

This is all that I can say to-night on the subject of headache. It is not improbable that I have omitted much of importance. My idea was merely to present a brief outline of the subject, with hints as to diagnosis and treatment.

My classification of headaches is as follows:

(I) Organic headaches.

(II) Non-organic or functional headaches.

- (*A*) Headache, with sympathetic nerve involvement—*migraine*.
- (*B*) Headaches from purely functional disturbance of nutrition.
  - (*a*) Headache from anæmia.
  - (*b*) Headache from hyperæmia.
- (*C*) Headaches from disturbances of nutrition from diathetic and toxic causes.
  - (*a*) Diathetic headaches.
    - Lithæmic.
    - Rheumatic.
    - Diabetic.
    - Uræmic.
  - (*b*) Toxic headaches.
    - Malarial.
    - Alcoholic.
    - Lead.
    - Tea and coffee headaches.
- (*D*) Headaches of reflex origin.
  - Eye headaches.
  - Nasal headaches.
  - Gastric headaches.
  - Cardiac and pulmonic headaches.
  - Uterine and ovarian headaches.
  - Bowel headaches.
- (*E*) Hysterical headaches.
- (*F*) Neurasthenic headaches.
- (*G*) Headaches associated with the various febrile disorders.

MEMORANDA.

THE PHYSIOLOGICAL ACTIONS OF ATROPINE.

It is unfortunate that Dr. Wood, in his criticism of the clinical portion of my essay on atropine, did not give facts to combat those which I offered, and upon which my conclusions were based. It seems equally unfortunate that he did not offer in detail the results of his own experience in the treatment of opium poisoning with atropine. Doubtless it will be said that, in those cases in which "the most powerful and prompt of the respiratory stimulants" proved of no avail, no other treatment would have been effectual, but I fear that this will hardly convince those who have any extended acquaintance with the literature of opium poisoning.

From his criticism of the physiological part of the paper I extract the following: "The important conclusion is reached in the language of the author, 'Thus, clinical, experimental and toxicological data demonstrate clearly that atropine cannot be considered a reliable respiratory stimulant;' on the opposite page, however, facing this sentence, is the positive (and, as I believe, correct) statement: 'The fact that the rate is always increased after section of the pneumogastric nerves is *conclusive proof that the drug stimulates the respiratory centres.*'" The purport of this is that one statement or the other is incorrect, or, in other words, that I have contradicted myself. But the important fact must not be lost sight of that a drug may stimulate the respiratory centres and yet not be a respiratory stimulant; just as another drug may act as a powerful excitant to the motor centres of the spinal cord and not be a convulsant. We must distinguish between *action* and *effect*. Atropine may stimulate the respiratory centres, yet there may be no increase either in the rate or depth of the respiratory movements. To say that atropine under such circumstances is a respiratory stimulant is as unwarrantable as to contend that in an animal paralyzed with curare the effect is that of a convulsant.

In the next paragraph Dr. Wood wishes it understood that he has already noted in his "Therapeutics" that atropine stimulates the respiratory centres, but paralyzes that portion of the peripheral pneumogastric nerve which is connected with the function of respiration. But an examination of the authority for the last statement shows that quantities very much less than "*very large fatal*" doses are capable of seriously affecting this part of the pneumogastric nerves. The practical, and consequently vital, point of the whole matter requires recognition of the fact that the effects of the depression of the peripheries of the vagi may supersede those of the stimulation of the respiratory centres, and that the effects of similar doses are inconstant, and may be in opposite directions.

In the last paragraph we find that "the *theory* of the stimulation of the accelerator nerves (and centres) originated before it was believed that small

doses of atropine stimulate the heart directly." It is surprising that this theory should hold a place as a fact in certain of our text-books, and, especially so, in the face of recognized researches which offer stronger evidence to indicate that the increase in the pulse-rate is due to a direct action on the heart than any which points to the accelerator centres or nerves.

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THE TREATMENT OF FELONS.

THE February issue of the MAGAZINE contains an article by Dr. G. G. Davis on "The Treatment of Felons and Some Inflammatory Troubles of the Fingers," which deserves attention because of its intrinsic merit, and because it deals with a class of diseases that are sufficiently common and painful, to make the sum of the distress they cause probably greater than that of other more formidable affections which have lately received so much attention in the periodicals. There is, however, one point in which this article is not satisfactory, and that is its treatment of panaris. In this particular it is hardly in advance of the text-books. These agree in saying that a felon should be incised early and freely; but such directions are too indefinite to mean anything to the young and inexperienced practitioner, and he who has become wise through his own mistakes does not need them for guidance.

The tyro who follows these directions and slashes a finger while suppuration is still limited to a very small area, and misses the pus, will probably for years afterward follow the teachings of the older books and not cut until he is sure of the presence and location of pus, and thus doom his patients to the most excruciating suffering for a period varying from two to six weeks, and in many cases to permanent impairment of the affected member.

The two features in the treatment of felon, which above all others determine the course of the disease, are undoubtedly the character of the incision and the time at which it is made. Dr. Davis does not say whether he makes a large or a small incision; but as to the time of making it he says: "No positive rule can be given, but my practice has been to resort to the incision when either the pain has been so severe as to prevent sleep for two successive nights, or when from the violence of the local trouble I am convinced that suppuration is inevitable." In my experience delay of the incision to the end of two days from the beginning of the pain has nearly always resulted in extension of the disease that necessitated very free use of the knife, and in the deep-seated variety of the disease, more or less involvement of the bone, with much destruction of tissue, and slow recovery. The alternative—to cut whenever suppuration is inevitable—seems a more timely procedure, but then how is the inevitableness of suppuration to be recognized before it has already occurred?

The most definite instructions upon this point have probably been given by Dr. Agnew in the last edition of his "Surgery," in which he says: "The knife

should never be withheld under the impression that suppuration has not occurred. The incision should be made as soon as the nature of the disease is recognized, or the dusky-red swelling and throbbing pain are present."

The presence of this characteristic swelling and pain is undoubtedly the early and decisive indication for an incision, and in the deep-seated form of the disease it should be made as soon as it appears; but that it should be made deep and long, as some say, at this early stage is questionable. There is no necessity for laying open a finger the whole length of a phalanx and making a wound that will require a week or ten days to heal in order to let out a single drop or less of pus.

An unfavorable experience in cutting liberally for felon in the early stage led me to seek means of locating accurately the centre of the morbid process and simply puncturing it with a small instrument. For a number of years I used an ordinary tenotome, but this, as usually furnished by the instrument makers, is too heavy and too much wedge-shaped, and for this reason causes much more pain than a lighter sharp instrument. During the last five or six years I have used for this purpose a straight bistoury, about half again as heavy as a well-made Graefe cataract knife.

In that form of the disease which begins as a periostitis, which is the most painful, most destructive, and in which the earliest possible incision should be made, the point where pus will form, or is already present, can be accurately defined by pressure upon the swollen part with the end of a small probe. By pressing the end of the probe gently upon different parts of the swelling, one point, usually near the centre, will be found more sensitive than all others. Upon deeper pressure at this point the patient will say, "It hurts down to the bone," while around it deep pressure is better borne. Under this most tender spot, down on the bone, is the seat of the disorder, and it must be reached by the knife. A light blade with a sharp edge and point can be pushed down to the bone, and when it reaches it, the handle tilted in the direction of the edge so as to make the opening funnel-shaped without inflicting very severe pain, while with a heavy, dull knife the pain of the operation is excruciating. If the point of the knife penetrates the focus of the disease within twenty-four hours of the onset of the pain there may or may not be seen on the end of the knife upon the withdrawal of it a bead of pus, but in either case the finger will be well in a day or two. A recent illustration of this is the following:

A woman had a felon about three months ago, which she would not permit me to open until the third day. The finger was then very much swollen, and presented all the common signs of the presence of suppuration. A large incision was carried down to the bone, because the time for a small one had gone by, and three or four drops of pus evacuated. It required two and a half weeks to secure healing. One day, about four weeks ago, she asked me to look at another of her fingers in which a throbbing pain had appeared that morning. As there were a little swelling and discoloration, and a point at which there was deep-seated pain upon pressure with the end of a probe, I proposed opening it at once. To this she objected; but the night's suffering and the recollection of her former experience made her willing to have it lanced the next morning. A small, funnel-shaped opening was made in the sensitive point down to the bone, and a very minute bead of thick pus came out on the point of the knife. In forty-eight hours thereafter the finger was well, and the four or five days' suffering and two weeks' inconvenience were avoided.

It is altogether probable that this method of locating and treating this disease early has been practised by others, but as I have not seen it mentioned in the books or periodicals it seemed to me desirable to present it to those who may not have learned it by experience.

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SARCOMATOUS INFILTRATION OF THE LEFT OVARY, WITH EXTENSIVE INVOLVEMENT OF OTHER ORGANS, AND THE SUBCUTANEOUS CONNECTIVE TISSUE.

FOR the following notes of the case I am largely indebted to my resident physician, Dr. Jos. P. Tunis:

K. R., aged 33, single, a child's nurse, was admitted to the Episcopal Hospital under my care, January 6, 1891. Family history negative. The patient had an attack of jaundice about two months ago, and for the last four years has been subject to headache and nausea. (Menstruation had been painful, and there had been, I think, some menorrhagia for some months back.) Three months ago the patient noticed a swelling in the lower part of her abdomen, and about this time she began to suffer from bilious vomiting soon after rising in the morning.

Upon admission to the hospital she was much emaciated, and her abdomen was distended with gas and fluid, measuring forty-nine inches at the umbilicus. The diaphragm and heart were pushed upward, the apex beat being found in the fourth interspace immediately beneath the nipple. Numerous hard nodules, varying in size from that of a small pea to that a marble, were found beneath the skin of the trunk and abdomen, and an accumulation of these kernels was found in the right axilla. There was slight fluctuation on palpation of the abdominal walls.

The patient was very pale and weak, and her face had a pinched and anxious expression. Her feet and legs were slightly œdematous. No heart murmur could be detected, but there was impairment of percussion resonance under the left clavicle, and some fine crackling was heard at the end of deep inspiration over the upper third of the left lung. Owing to the tympanitic condition of the intestine the lower margin of the liver was not felt. The spleen was apparently of normal size.

A diagnosis of *latent tubercular infiltrations of the left lung with tubercular peritonitis* was made, but the absence of very marked tenderness made me adopt this diagnosis with some misgivings. Tincture of digitalis, ten drops every three hours, and six ounces of whiskey daily were ordered.

January 9.—Patient complains of a "splitting pain" in her head; superficial veins over the right temple distended. As she rejected nearly all nourishment, her stomach was washed out to-day. She swallowed a soft India rubber tube without any very great difficulty; and one quart of lukewarm water, with one drachm of bicarbonate of soda dissolved in it, was then poured in, and passed out by siphonage. She was somewhat exhausted after this, but was able afterward to retain small quantities of liquid nourishment.

January 13.—Vomited twice to-day after taking milk, and complained of much pain over the region of the liver. Examination showed that the liver extended about three fingers' breadth below the costal margin, and growths could be felt upon its anterior surface similar in consistence to the subcutaneous growths above alluded to. At about this date nutritive enemata were ordered, as little or no nourishment could be taken by the mouth, and for several days she was fed almost exclusively *per anum*.

January 20.—Bowels do not move except after the use of rectal injection or glycerine

suppositories. Patient not apparently in much pain, but growing weaker and thinner every day, and has at times mild delirium, from which she can easily be roused. A few days after this incontinence of urine set in, the skin over the sacrum became somewhat reddened, and a small bed-sore formed.

January 31.—Patient after this failed rapidly in strength, and died to-day from inanition. No dyspnœa had at any time been noticed during her stay in the hospital.

FIG. 1.

Spleen cut in half. Sarcomatous nodules at *n* and *n*.

FIG. 2.

a, Right ovary; *b*, uterus; *c*, left ovary.

POST-MORTEM EXAMINATION.—Emaciation extreme. More than a quart of dark yellow ascitic fluid in the peritoneal cavity. Pelvic cavity entirely filled up with a large, hard, nodular mass, which proved to be a sarcoma of the left ovary. This mass was as large as a fœtal head at term. The right ovary was about the size of a large walnut and showed commencing sarcoma. The uterus was of normal size and presented a nodule of the same character in its anterior wall. All the mesenteric glands were enlarged, some very markedly so; the peritoneum was not involved. The liver weighed one pound and fourteen ounces, and was tightly adherent to the diaphragm and to the posterior abdominal walls. Throughout the entire parenchyma of the organ and upon its upper surface, whitish, slightly blood-stained masses of new growth were found. Some of the masses were of the size of a lemon, and hardly a square inch of non-infiltrated liver tissue remained. The kidneys and the right supra-renal capsule were also infiltrated with the new growth. The spleen presented a nodule of the size of a hen's egg with very sharply defined borders. The lungs, particularly the left lung, showed disseminated whitish indurations. The heart showed four or five foci of sarcomatous growth, one in the substance of the left auricle, and two or three in the left ventricular wall. The nodules that had been felt during life beneath the skin proved to be of the same character. Upon microscopic examination the growth from the liver was found to be a small, round-celled sarcoma, alveolar in type. Some portions of the growth presented also marked myxomatous degeneration.

FIG. 3.

Liver. Incisions into its substance at *a* and *a'*.

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EDITORIAL.

SOME ADDITIONAL EVIDENCE IN REGARD TO PYOKTANIN IN DISEASES OF THE EYE.

A LARGE number of observations have been made in regard to the value of pyoktanin, and an equally large number of contradictory reports have appeared. The drug, since its introduction by Stilling, has been enthusiastically praised, moderately commended and unhesitatingly condemned by various clinical observers. The reports of Carl, Braunschweig and Bayer declare that the excellent qualities which have been attributed to this dye not only do not exist, but that, in addition to the discolorations, positively harmful results may follow its application, even to the extent of an irritation which deepens into a croupous inflammation. French observers, like Valude and Vignal, have shown that violet pyoktanin is more powerful than the yellow, but that it is far inferior to the perchloride of mercury as a germicide. The yellow pyoktanin was found utterly inefficient in all cases of ophthalmia neonatorum; indeed it seemed to increase the secretion. The violet was useless in cases of catarrhal ophthalmia, and, perhaps with the exception of their diffusibility, the aniline colors were not valuable in corneal ulceration; while in conjunctival cases, both purulent and non-purulent, their feebleness as germicidal agents rendered them incomparable with the bichloride of mercury. In this country Gould had

indifferent success with the drug except in dacryocystitis and lachrymal conjunctivitis, in which conditions its action, probably due to its diffusibility, was strongly commended. Cheatham, on the other hand, found it of service in purulent conjunctival affections and trachoma, and was in accord with Gould as to its value in muco-purulent inflammations of the tear-sac. De Schweinitz, continuing the observations of Gould in the Philadelphia Hospital, came to similar conclusions as far as the tear-sac was concerned, but in all other affections was disappointed in its effects, and noted positively harmful results in cases of corneal ulceration. The first of these three observers also described a beneficial influence in chronic soft leucoma, the sequel of interstitial keratitis, pannus and like affections.

Wanscher (*Therapeutische Monatshefte*, Feb., 1891), in a clinical study of this drug, is outspoken in his praise. According to this observer a one per cent. solution of pyoktanin is a remedy that fulfils the important indication of searching out certain bacteria and killing them, leaving the tissue unharmed. He not only points out its value in a series of cases, but dwells particularly upon its entire innocuousness in so far as the structures of the eye are concerned, never having seen an evil result follow its use, but on the contrary believes he has saved eyes the subjects of blennorrhœa which otherwise would have perished. In addition to the cases of blennorrhœa he has treated, by instillations of a one per cent. solution of pyoktanin, cataract operations, iridectomies, strabotomies, blennorrhœa of the tear-sac, specific choroiditis, simple iritis, suppurative conjunctival inflammations and superficial keratitis, and in all cases the results justified the favorable opinion which he had formed of blue pyoktanin. One case of blennorrhœa of the tear-sac is quoted as cured which had withstood for a year treatment with all known medicaments, including the galvano-cautery. In regard to the cases of iritis and choroiditis this author is not quite sure whether the good results obtained were or were not due to the action of the remedy. He also has obtained useful results with this drug in a fistula communicating with osteitis of the tibia, in gonorrhœa, and in the after-treatment of inflammations at the matrix of the nail. The stains which are made by the remedy seemed to him of small account, as when fresh they are readily washed away with alcohol. As far as this enthusiastic writer is concerned, there is only one fault with Stilling's pyoktanin treatment, and that is that he, the writer, did not himself first describe it. He believes that a one per cent. solution of blue pyoktanin, properly instilled and with sufficient frequency, is one of the most praiseworthy remedies in the ophthalmological armamentarium for the treatment of purulent eye affections.

For those who have treated many cases of purulent disease of the conjunctiva with pyoktanin and seen its dismal failures to modify the inflammation, and have observed its unfavorable contrast with drugs like bichloride of mercury and nitrate of silver, and for those who have used it in ulcers of the cornea and seen positive harm result, and for those who have failed to find any influence of the drug upon the deeper structures of the eye, it is difficult to understand this somewhat eulogistic clinical report. There seems very little doubt that the name pyoktanin has been justly applied to this drug, and that, owing to its diffusibility in certain instances exemplified by unhealthy conditions in the

lachrymal passages, its power of penetration renders it of value, but it seems equally certain that its germicidal influence is greatly inferior to nitrate of silver and bichloride of mercury, and consequently the drug is greatly inferior to these two remedies in the treatment of purulent conjunctival affections. Perhaps the eyes treated by Wanscher in the Commune Hospitals in Copenhagen react differently to the aniline dyes than eyes do in this country and in some portions of France, but nevertheless the weight of evidence thus far does not justify the extravagant claims made by Dr. Wanscher for blue pyoktanin.

BOOK NOTICES.

CYCLOPEDIA OF DISEASES OF CHILDREN, MEDICAL AND SURGICAL. With Articles by American, British and Canadian Authors. Edited by JOHN M. KEATING, M.D. Illustrated. Fourth Volume. Philadelphia: J. B. Lippincott Co., 1890.

With this fourth volume Keating's "Cyclopedia of Diseases of Children" is completed, and when we repeat what has been so often said by others, that the fourth volume is not in any way inferior to its predecessors, our readers will know that it will prove of value to them in the practice of their profession.

The first article, which is fifty pages in length, is written by Dr. Charles H. Burnett, of Philadelphia, and is characteristic of its author, being clear, practical and to the point. While it contains almost no bibliographical references, it may be considered a reliable guide in the treatment of ear affections in children, particularly as its author has so large an experience in the treatment of this class of diseases.

Part II opens with an article upon "Diseases of the Eyelids, Lachrymal Apparatus, Conjunctiva and Cornea," by Dr. G. E. de Schweinitz, and it is laden not only with the fruits of his own experience in the treatment of diseases of the eye, but with a complete bibliography of the best writings upon these affections.

Drs. Turnbull and Gould, of Philadelphia, write upon diseases of the eye itself in a paper of thirty-seven pages, giving the definitions of the various abnormal conditions found in this organ. The authors evidently have an eye to female beauty, as they state, under ametropia, that the clearness of the function of vision is of the greatest value to the organism in general and particularly so in regard to sexual selection, clear and healthy eyes being of the highest importance in sexual choice through beauty. Drs. Turnbull and Gould believe, therefore, that the smallest amount of ametropia in girls and women should be corrected, although in men it can be safely ignored.

Dr. Oliver's article upon "Ophthalmoscopy" is illustrated by a number of cuts, which are unsurpassed in their clearness both from the point of the physician and the publisher, and closely resembles that of Dr. de Schweinitz in copious references to current literature.

In Part III the longest article in the book occurs, namely, that of Drs. Keating and Young, upon "Physical Development." Covering as it does over eighty pages, and illustrated copiously by photographs taken from Muybridge's collection, it affords, perhaps, the best guide to the physical development of children that has been contributed to medicine up to this time.

The insertion of articles upon "School Hygiene," upon "Juvenile Crime," and "Medico-Legal Testimony" might perhaps be considered by the hypercritical as being unnecessary in a book upon the diseases of children.

The larger part of the volume is very properly taken up with the consideration of "Diseases of the Nervous System," and the chief fault which can be found with this section is the fault which all the preceding volumes of this Cyclopedia have presented, namely, that the articles are so subdivided among various authors that a certain amount of overlapping is unavoidable. The first article in this portion of the book by Dr. Allan McLane Hamilton, upon "Diagnosis of the Diseases of the Nervous System," is of interest and of importance, as too little attention is frequently paid to the methods by which we are to separate one condition from another in cases of nervous disease.

Some of the articles, notably those of Dr. Gray, of New York, are so brief as to be disappointing. This is particularly the case with the one on "Epilepsy," which only covers fourteen pages; while the one upon "Tetanus," by Dr. Dercum, which immediately follows it, covers twice this space. In the article by Dr. Dercum, the infectious nature of tetanus is clearly pointed out, and reference is made to the earlier researches of Kitasato, the Japanese investigator, whose name has recently been spoken of so widely in connection with his work in Koch's laboratory in association with Behring. The most disappointing article of all is that of Dr. Mary Putnam Jacobi, on "Spinal Meningitis, Myelitis and Hemorrhage into the Spinal Cord." While the authoress has fortunately referred frequently to the literature on this subject, the article is disappointing, because it lacks practical value. The insertion of the history of case after case wearies the reader and conveys very little information, particularly as these histories of the cases are either unnecessarily lengthy or so short as to convey practically no idea of the disease.

Dr. Wharton Sinkler's article upon "Poliomyelitis Anterior" is well written, and presents in a comparatively short space the best and most advanced views in regard to the treatment of this common affection.

In the article on "Friedreich's Ataxia," Dr. Dana gives full credit to the researches of Dr. Griffith, of Philadelphia; and Drs. McNutt and Post follow him with a contribution upon "Structural Abnormalities of the Brain and Cord." "The Surgical Treatment of the Brain and Spinal Cord" is thoroughly discussed by Dr. P. S. Connor, of Cincinnati, who is ably followed by Dr. Charles B. Nancrede, of Ann Arbor, upon the "Operative Treatment of the Brain and Spinal Cord."

The article by Dr. Morris J. Lewis upon "Convulsions in Children" is one of the best of the volume, as is also that by Dr. Mills upon "Hysteria," this author describing with his usual clearness the symptoms and treatment of this interesting affection. The volume closes with a copious index to its contents, and with a general index of the entire Cyclopedia, covering thirty-one triple-column pages. The dimensions of the task of completing so grand a work so successfully can only be grasped by one who has performed similar labor, and we congratulate the editor on the presentation of so valuable a contribution to the literature of medicine.

Post-Mortems—What to Look for and How to Make Them. By A. H. Newth, M.D. Edited and revised by F. W. Owens. Detroit, Mich.: The Illustrated Medical Journal Company, 1890.

This little manual, of some hundred and thirty-six pages, recommends itself in many ways for a careful perusal by those of the profession not fully experienced in performing post-mortems where medico-legal questions are involved.

Many "rules-of-thumb" and much good advice are given in a small space —such things as are usually gained by experience only. More complete than others of its kind, and yet small in size, it forms a valuable adjunct to the larger works on medical jurisprudence.

The work is not printed in such a way as to be available at the post-mortem table, and in this respect is inferior to Virchow's brochure on the subject. Again, the few lines devoted to poisons might well have been increased, even if other matter had been omitted. Barring these and a few similar defects, the manual is one well worthy of a large circle of readers.

LECTURES ON MASSAGE AND ELECTRICITY IN THE TREATMENT OF DISEASE. By THOMAS STRETCH DOWSE, M.D. New York: E. B. Treat & Co., 1890.

This readable, though somewhat discursive, book is apparently written under the impression that a physician should be a practical, working masseur, an impression that we think is erroneous. In this country, at least, few physicians wish to undertake the mechanical labor involved in the performance of massage, and, if their time is at all occupied, the cost of the treatment to the patient is out of all proportion to its value. While this work will doubtless continue to be performed by the skilled and trained artisan, there is no question of the need of a clearer idea among the prescribers of massage of its philosophical basis, mode of action and therapeutic indications, and these are most admirably given by Dr. Dowse.

The first lecture is devoted to the principles of massage, and shows the effects of the application of energy in this form on the chemical and vital activities of tissue, in language that cannot fail to be understood by medical men, though we fear beyond the comprehension of average masseurs. In the second lecture a good description of the forms of sensible massage is given—effleurage, petrissage, tapotement and friction—and it is to be regretted that this lecture was not bound in such a way that it could be disengaged from the remainder, in order that the physician might loan it to such of his nurses as intend to practise these movements. The methods of applying massage to various parts of the body and in various diseases are discussed in succeeding chapters, special attention being given to its action in stimulating the lymphatic and venous circulations and in the Weir Mitchell method.

The author has seen fit to add to this thorough treatise on massage two lectures on medical electricity, which will do little credit to the book, as they show a grasp of the subject that is at least fifteen years behind the times. With the honored exception of De Watteville, whose name is suspiciously foreign, this lack of progress in electro-therapeutics is peculiarly prevalent among our English brethren, and it is to be regretted that Dr. Dowse did not take a deterrent warning from his own delineation of the absurd directions often given for massage, the predominating thought in which is that "something like this way is as good as any." It seems comical that a lecturer should recommend that the galvanic current should be limited to ten milliampères in ordinary percutaneous applications, and show evidences of using the ancient cup and sponge electrodes dipped in salt water. The absence of clear directions for the "rest cure" general faradic stimulation, removes the only excuse for the addition of a poor compendium of electricity to what is otherwise a most readable and instructive book on massage. Barring an excessive use of italics, the style of the work is decidedly entertaining, and the letter-press and general make-up most excellent.

MODERN TREATMENT OF HEADACHES. By ALLAN MCLANE HAMILTON, M.D. Detroit, Mich.: George S. Davis.

Upon turning the pages of this little book one at first receives the impression that it might be a volume of poetical quotations, so numerous do long and elaborate formulas appear. This may be a valuable feature in a book on treatment, but it seems questionable whether, after having named the drugs which are suitable, it may not be left to the physician, for whom presumably the book is written, to make his own combinations. The subject of headaches is pretty comprehensively touched upon, and many valuable hints given in their management, very few of which seem original, and many of those spoken of as being favorites with the author are very ancient friends indeed. The subject of eye-strain as a cause for headache is dismissed with extreme brevity. Headache from rheumatism of the scalp muscles is hardly mentioned. On the whole, this little book is likely to be of more use to the laity than to others. With it to consult, intelligent persons might start upon a course of treatment for their headaches with large measure of hopefulness but the inevitable disappointment which comes of acting on only partial knowledge. The book claims little, but it does no more than justify its modest claim.

A PRACTICAL TREATISE ON IMPOTENCE, STERILITY AND ALLIED DISORDERS OF THE MALE SEXUAL ORGANS. By SAMUEL W. GROSS, A.M., M.D., LL.D. Fourth Edition. Revised by F. R. Sturgis, M.D. Philadelphia: Lea Brothers & Co., 1890.

The fundamental argument of this excellent brochure. namely, that impotence and spermatorrhœa are almost invariably induced or maintained by appreciable lesions of the prostatic portion of the urethra, is one so attractive to the genito-urinary surgeon, and is withal so full of promise, from a therapeutic standpoint, that it has obtained ready acceptance in the profession. Gross supports his argument with so many cases and with so much literature that the reader is tempted to forget there is another side to the question, and hence may be led to fix his eyes with a too hopeful and constant gaze upon the prostatic urethra. White showed long since that by means of the bulbous bougie coarctation could be found in every posterior urethra, whether healthy or not; hence, given a disorder of the sexual functions, the surgeon will have little trouble in discovering what has been termed an appreciable lesion. As to whether the main disorder will vanish synchronously with the correction of the alleged abnormality of the posterior urethra, is a question which each must answer from his experience. The case-books of those most familiar with this class of cases do not present a picture of unvarying success.

The text has been enriched by an extensive bibliography. The classification of subjects follows that of the most modern writers; the directions for treatment are unusually satisfactory, and even he who does not absolutely believe in the main theme of the work will find it of distinct service to him in his practical work.

THE SCIENCE AND ART OF OBSTETRICS. By THEOPHILUS PARVIN, M.D., LL.D. Second Edition. Philadelphia: Lea Bros. & Co., 1890.

Parvin's Obstetrics has been before the profession in its first edition since 1886, and all earnest students of obstetrical literature are perfectly familiar with it. The respectful attention with which the book was first received has been fully justified on long acquaintance.

In the second edition the few faults of the first have been corrected, and much new matter has been added without increasing materially the size of the volume. The illustrations generally are finer than any we have seen elsewhere

on the subject. The chief characteristic of the work is the profound general and professional erudition of its author. The only feature of the book which could excite unfavorable comment is the author's modest self-suppressio, the presentation of others' views, and the failure to insist upon his own. But as this is, at the worst, but an exaggerated virtue, criticism is disarmed.

ESSENTIALS OF PRACTICE OF MEDICINE. Arranged in the Form of Questions and Answers. By HENRY MORRIS, M.D. With an Appendix on the Examination of Urine, by LAWRENCE WOLFF, M.D. Philadelphia: W. B. Saunders, 1890.

This volume of 368 pages, with an appendix on the examination of urine which "is intended as an aid to the advanced student of medicine who is preparing for his degree, or to the young practitioner in diagnosing affections or selecting the remedy for them," would unfortunately prove of rather doubtful advantage to one who desires to accomplish these objects.

In the few lines devoted to muguet or thrush the writer simply makes the statement that the oïdium albicans is always present in these cases, and is the probable cause of the disease, but no mention is made of the more probable fact, as shown by Grawitz, that the oïdium albicans is not the cause; nor does Reess consider the oïdium as the thrush fungus, Bagnisky and Strumpf being of similar opinion. Sufficient has been quoted to show that the unqualified statement that the oïdium probably is the cause of muguet is, to say the least, misleading.

Rubella, we are surprised to find, according to the author, "presents a peculiar eruption, somewhat resembling measles, and usually accompanied by very little fever." The fact that this eruption also sometimes bears a most striking resemblance to scarlatina, and that on account of this resemblance two distinct forms of eruption have been recorded and accepted by all authorities on the subject, *rubella morbilliforme*, and *rubella scarlatiniforme*, finds no mention in this diagnostic syllabus. When recognized authorities upon this disease, as Harrison, Klaatsch, Copeland, Goodhart, Byers, Picot, Henderson, Edwards, Dukes, Griffith, Kassowitz, Murchison, Liveing and Tonge-Smith, have described the multiform character of the eruption of rubella, it is of doubtful value to inform the "advanced student or the young practitioner in diagnosing affections or selecting the remedy for them" that the eruption of rubella somewhat resembles measles. The only complications recorded by the writer are pneumonia and desquamative nephritis, whereas bronchitis is a much more frequent complication, and gastro-intestinal irritation, as enteritis and enterocolitis, by far the most frequent of all the complicating maladies. An epidemic is reported by an American observer of 160 cases, in which forty per cent. of the cases presented gastro-intestinal irritation of various forms. The fact that membranous enteritis occurs in children, as shown by the recent writings of several competent observers, does not find a place in this work, nor does the fact, now so well recognized by clinical pathologists, that an alcoholic is more apt to present a fatty liver, or at least a "mixed cirrhosis," than a typical example of interstitial hepatitis, receive mention in this students' guide.

The volume is a further contribution to a very questionable class of medical work, a field that has already been too well tilled, but as a representative of its class will no doubt be of some assistance to the student who desires to pass an examination.

The appendix, containing the chemical and microscopical examination of the urine, prepared by Lawrence Wolff, is a handy and careful recapitulation of the subject, and will aid very much in arranging the matter systematically in the student's mind; it furthermore will be of use as a reference table for young practitioners.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND J. HOWE ADAMS, M.D.

Complications in Two Thousand Fatal Cases of Typhoid Fever.

Holscher (*Münchener med. Wochenschrift*, Jan. 20, 1891) reports 2,000 deaths from typhoid fever in which *post-mortems* were held.

Twenty-four per cent., or 480 cases, died from the immediate effects of the typhoid poison. Twenty-four cases are reported as sudden deaths, the cause of death in the majority of these being degeneration of the heart muscle. Tracheotomy was performed in fifteen cases, usually for perichondritis of the larynx. Pregnancy is considered a serious complication. Out of the 800 women in the series twenty-seven were pregnant. Five cases of "walking" typhoid are reported; two of these died from an error indiet, two of degeneration of the heart, and one of high grade anæmia.

Relapse took place in 103 cases. This number, five per cent. of all the cases, is above the average usually given, but the author considers eight per cent. of fatal cases to have suffered relapse.

The proportion of males to females was as three to two. The average age was 27½ years. Of the males, one was over 75 years, and one a nursing infant. Of the females, one was 72 years, one 9 months.

Death took place in the third and fourth week in fifty per cent. of the cases; twenty-five per cent. occurred in the second and fifth weeks; two and a-half per cent. in the first week. Over fifty per cent. of those who died in the first week were free from complications.

The causes of death which reached five per cent. or over were the following: Œdema of the lungs, fifteen per cent.; parenchymatous and fatty degeneration of the heart, thirteen per cent.; parenchymatous and fatty degeneration of the liver, ten per cent.; bronchitis, ten per cent.; lobular pneumonia, eight per cent.; croupous pneumonia, seven per cent.; hemorrhagic lung infarct, six per cent.; perforation of the intestine, with peritonitis, six per cent.; intestinal hemorrhage and œdema of the brain, each five per cent.

Glycosuria and Diabetes.

Moritz (*Münchener med. Wochenschrift*, Jan. 6, 1891) considers it probable that grape sugar is present in normal urine from the fact that the characteristic reaction with phenolhydrocine can be demonstrated. There are a great many cases where grape sugar appears in the urine which are not real diabetes mellitus; these may be called simple glycosuria. This symptom is comparatively harmless in the absence of all the severe general symptoms—emaciation, loss of strength, thirst, furunculosis, etc. A combination of these general symptoms with sugar in the urine determines a diagnosis of diabetes mellitus, but it is not safe to exclude the disease in all cases where sugar appears without the general symptoms, for there are certain instances where a small amount of sugar constantly present in the urine is the only symptom until a sudden outbreak of general character occurs.

It is impossible to fix upon any one symptom which distinguishes simple glycosuria

from true diabetes mellitus, but simple glycosuria may be said to be an increase of the normal amount of sugar, which disappears with the cause, while diabetes mellitus is a true disease, chronic in nature, its characteristic being the persistence of the glycosuria. The author divides all cases into two groups—glycosuria occurring under pathological conditions, and glycosuria occurring under physiological conditions. He then quotes many pathological conditions which give rise to glycosuria—injury to the floor of the fourth ventricle, extirpation of the pancreas, cirrhosis of the liver, and apoplexy, being among the number. Among the physiological conditions he considers the puerperium as the most important. Eighty per cent. of all lying-in women have from .8 per cent. to 1 per cent. of sugar in the urine. The so-called alimentary form of glycosuria occurs after the ingestion of a large amount of sugar. Some authors consider that this tendency to excrete sugar shows a disposition toward diabetes mellitus. Where this tendency to glycosuria is noticed only after the ingestion of sugar it may be considered physiological, but where it is found after a meal of starchy foods it may be considered pathological.

For clinical purposes diabetes mellitus may be divided into a mild and a severe form. In the first the sugar is taken from the carbohydrates of the food; in the latter this is not the case. In suspected cases the urine should be examined some hours after a meal of carbohydrates with little or no sugar. If sugar is present in the urine a diagnosis of diabetes mellitus may be made; if it is absent the disease may be excluded. In certain cases where a large amount of urine of low specific gravity is excreted, it is necessary to examine the urine passed shortly after the meals, and not a specimen of the mixed urine.

The author considers the fermentation test the only entirely reliable one. He advises the following simple apparatus: A test-tube is filled with a mixture of urine and yeast and is stopped with a gum cork perforated with a U-shaped tube. Two control tubes are filled, one with normal urine and yeast, and another with the suspected urine with yeast, and a little sugar added. Care must be taken that the urine is not rendered antiseptic by the administration of salol or salicylic acid to the patient. If the urine contains sugar, carbonic acid gas will collect in the upper part of the tube. He advises the combination of this test with one of the reduction tests to make the diagnosis absolutely sure.

The Binaural Stethoscope.

Groedel (*Berlin. klin. Wochenschrift*, Jan. 19, 1891) considers the double stethoscope much superior to the single instrument. Its chief objection is the necessity of holding the bell with the fingers while examining. He describes two instruments which overcome this objection. Paul's stethoscope has a double hard rubber bell. The inner one corresponds with the bell of the ordinary stethoscope, and is connected by means of a forked metal tube with the two flexible ear tubes. The outer bell is connected by means of a rubber tube with a compressible bulb without a valve. It is entirely separate from the inner bell. When the instrument is to be used the rubber bulb is compressed and the bell applied firmly to the part to be examined; the bulb is then released, and the instrument held in place by the pressure of the air.

An instrument devised by the author has no flexible parts. It has the two metal ear tubes of the ordinary double instrument; each of these is soldered into a hemispherical cap; the caps are fitted by means of a hinge over a metal globe having two openings under the openings of the ear-tubes; the globe is connected directly with the bell. When the ear-pieces are inserted in the ears the instrument may be held against the part to be examined by the pressure of the head.

A Contribution to the Etiology of Bright's Disease.

Agnes Bluhm (*Deutsch. Archiv f. klin. Med.*, Bd. 47, Heft 3 and 4) reviews the etiology of the different cases of nephritis occurring among 8,442 patients presenting themselves at the Medical Clinic at Zurich, between January 1, 1884, and July 1, 1889, paying particular attention to the connection between nephritis and the infectious diseases.

Three forms of Bright's disease are recognized by this writer—diffuse acute nephritis, diffuse chronic parenchymatous nephritis, and diffuse interstitial nephritis. Among all classes of diseases occurring in this period of five and a half years, true Bright's disease occurred in 3.18 per cent., simple albuminuria in 5.72 per cent.; of all cases of Bright's disease, acute nephritis occurs in 51.85 per cent. Seventy per cent. of the cases of acute nephritis followed acute infectious diseases; 5.71 per cent. followed chronic infectious diseases; 2.85 per cent. followed exposure to cold; .71 per cent. followed skin diseases; 1.41 per cent. resulted from lead and mercury poisoning and catarrhal icterus; .71 per cent. from disease of the intestinal tract; 2.85 per cent. in diseases of the circulatory apparatus; 2.14 per cent. following blood and constitutional disorders; .71 per cent. following pregnancy; 2.85 per cent. from the spread of diseases from the urinary passages, and 6.42 per cent. from causes unknown.

The percentages of the occurrence of nephritis in the infectious diseases show septicæmia and pyæmia, ulcerative endocarditis, scarlatina, pleuro-pneumonia, and peritonitis as the more commonly associated with the acute form; diffuse chronic parenchymatous nephritis occurs in .46 per cent. of all cases presented at the clinic, forming 14.82 per cent. of the nephritic cases. This etiology is not so clear, the etiological factors being remote and uncertain, so that no tabular form of the causes can be given. A small number of cases are known in which this form of Bright's followed acute infectious diseases; one case is cited by the author, where chronic parenchymatous nephritis followed an attack of epidemic parotitis; chronic suppurative processes, toxic influences, especially alcoholic poisoning, play undoubtedly great rôles in the etiology. The change from acute to chronic parenchymatous nephritis is seldom seen according to the opinion of many authors; it happens more commonly in scarlatinous nephritis. The point is brought out as to whether it is not probable that many of these chronic parenchymatous cases in which the origin is shrouded in mystery, or where exposure to cold has been assigned as the cause, do not owe their origin to the acute infectious form of nephritis, in which the primary disease was not observed.

Diffuse interstitial nephritis occurred among the 8,442 patients in 1.06 per cent. of all cases, and among the nephritic cases in 33.3 per cent. The origin of this form of nephritis presents still more difficulty from an etiological standpoint. This obscurity is due to the slow development of the symptoms, the latent course of the disease, and the fact that often, even late in the disease, scarcely any attention is attracted to the kidneys. The author presents the history of a few cases of contracted kidney, seemingly due to acute infectious diseases. Toxic chronic interstitial nephritis forms a part of the etiological picture; again, syphilis is undoubtedly an important factor.

In conclusion, the author decides that in the etiology of acute Bright's, the acute infectious diseases take first place, and that for the most part all of them appear to be able to produce nephritis; secondly, that although the observations hitherto published, concerning chronic nephritis following acute infectious diseases, are very meagre, yet this is explained in part by outside circumstances and in part by the very latent course of chronic nephritis; thirdly, the connection between the appearance of a nephritis complicating another disease does not depend on the severity of the primary disease; fourthly, the course of the primary disease, and the nephritis complicating it, are generally without influence upon each other.

THE TREATMENT OF ACUTE LOBAR PNEUMONIA: FROM AN ANALYSIS OF ONE THOUSAND CASES TREATED AT THE LONDON HOSPITAL BETWEEN 1880 AND 1890.

W. SOLTAU FENWICK (*Lancet*, Jan. 31, 1891) believes that it is conclusively shown from his analysis of these cases that the mortality from pneumonia is directly proportionate to the severity of the symptomatic fever, regarding the average temperature of 103° as usually attended with the minimum degree of mortality, hyperpyrexia and apyrexia corresponding to the maximum of danger to life. Therefore he concludes that a high temperature destroys the functional activity of some vital organ. The condition of the lung has always concentrated he attention of the physician and constitutes the target at which his measures are aimed;

whereas, the immediate cause of death in acute pneumonia is heart failure. There are two factors producing this condition—an increased resistance to the propulsive action of the heart and a progressive deterioration of its muscular substance. The facts determined by the statistics bear out the theory that the heart is the vital organ affected by the fever, for death is far more frequent at the fifth day of the fever, when it is at its height, and at the crisis, when cardiac collapse results from sudden withdrawal of the fever. Examination in detail of the two great methods of treatment is made with this thought in view.

In one method he finds the chief measures were aimed to relieve the condition of the lung, and while stimulants were freely given to whip up the flagging heart, the cause of its physical lameness was untouched. The result was that among 552 cases so treated by the ordinary methods, the mortality exceeded twenty-three per cent., although alcohol was exhibited in seventy per cent. of cases. The second form of treatment was adopted solely to economize cardiac force by minimizing the injurious influences of fever. In 108 cases of similar severity in the same class of patients, the treatment consisted in the systematic reduction of temperature by means of sponging or the ice-cradle, which is described as made according to Samuel Fenwick's directions. Of this number only forty-one per cent. received alcohol, and only ten per cent. died. Again, among the former class forty-six deaths resulted from collapse at the crisis of the fever; in the latter class not a single death occurred from this cause.

These results would indicate that the consolidation of the lung is only an analogue to the typhoid ulcer and the scarlatinal sore throat, a characteristic result, but never a cause of the disease. Fenwick also shows that the quantity of albumen in the urine is of considerable prognostic value; the more albumen, the worse the prognosis. Also, those cases which commenced with severe gastro-intestinal attack are twice as liable to end fatally as those exhibiting the more usual initial rigor.

The Action of Prussic Acid in Tuberculosis of the Lung.

Koritschoner (*Wien. klin. Wochenschrift*, Jan. 15, 1891) reports his investigations on this subject. Inaugurated in medicine by the Italian physicians, Brera, Borda, Brugnatelli and Rasori, prussic acid was employed at the beginning of the century against every disease with great results. The most incredible effects were attributed to its healing action; even tubercular cavities were healed by its administration. Rapidly, however, its pan-therapeutic virtues shrank, until now its preparations are used for stomachic cramps and palpitation, and occasionally as a specific against tuberculosis of the lung.

Koritschoner resolved to try its efficiency in pulmonary tuberculosis, giving inhalations of the acid in vapor form, made by the action of potassium cyanide and dilute sulphuric acid. Thirty patients with incipient pulmonary phthisis were placed in a chamber two hours every morning and afternoon for six weeks; in this room the fumes were driven, no other treatment being added. The conclusions reached were as follows: Chronic prussic acid poisoning was produced in seven patients; diminution of cough and liquefaction of sputa occurred in all; reduction of pulse and respiration rate occurred in every case; doubtful action on body weight, night sweats and fever were observed; while there was absolutely no effect on the tubercular process in any way, which increased regularly and steadily throughout the treatment. Realizing the dangers of the treatment, Koritschoner wisely concludes that the results were too small to justify its use in such cases. He believes its reputation is due in phthisical conditions to its sedative action on the cough.

A Case of Tachycardia or Rapid Heart Successfully Treated by Electricity and Large Doses of Belladonna.

Oliver (*Brit. Med. Jour.*, Jan. 31, 1891) publishes the case of a man who developed violent attacks of palpitation, following severe fright. His pulse rate ran to 250 beats in the minute; there existed at the same time a grating, aortic, systolic sound and a soft, mitral, systolic murmur. The heart area was considerably enlarged. Under thirty-minim doses of

tinct. belladonna and the use of the interrupted current to the pneumogastric, he improved rapidly. His pulse rate fell to 120 in a fortnight, subsequently to 80; together with this appeared marked improvement in health.

A Contribution to the Pathogenesis of Diabetes.

H. Lépine (*Lyon Médical*, Jan. 25, 1891) believes that the diminution of the glycolytic ferment in the blood is the most important cause of diabetes. This ferment is supplied largely by the pancreas; hence the demonstration of peri-acinous sclerosis by Lépine and Barral, and of intra-acinous sclerosis in the pancreas by Launois and Lemoine is a most important advance. The difficulty of studying changes in the pancreas results largely from the power which the cells possess of auto-digestion, between the occurrence of death and the autopsy. The apparent integrity of the pancreas, macroscopically, in diabetic cases, should not prevent careful histological study.

A Contribution to Etiology of Acute Bright's Disease, with Remarks on Experimental Bacteritic Endocarditis.

J. Mannaberg (*Zeitschrift f. klin. Medicin*, 1890) does not regard the commonly accepted causes of Bright's disease as entirely satisfactory or complete. He accepts the mechanical theory of catching cold as a cause of the malady; the blood being driven to the internal organs causes hyperæmia in the vessels of the kidneys, the first step to the development of nephritis. Lassar observed that on plunging well-heated rabbits into ice-water he could produce interstitial inflammation in the kidneys, although this same process was noticed in the heart, liver and lungs. Dyscrasia, superalbuminosis and subalbuminosis of the blood, and vaso-motor disturbances are also considered in their etiological aspect. Among other theories are those founded upon the observations which appear to show the infectious character of many cases of acute Bright's disease.

Studying first the nephritis occurring as a complication in other diseases, Mannaberg finds, in a large number of cases, sufficient data to lead him to suspect the bacterial origin of the renal trouble. He believes that chronic diseases, such as tuberculosis, chronic suppurative processes, syphilitic ulcers, etc., can produce nephritis by the passage of their bacteria through the kidneys. He finds, however, that acute diseases are more active in producing infectious nephritis. The observations on this subject are not fully established as yet. This is the extent of our present data. The nephritis occurring in scarlet fever is due possibly to a toxine; in diphtheria to a ferment produced by the diphtheritic bacillus; in erysipelas to the streptococci Fehleisen; in pneumonia to the diplococci; in typhoid fever to the typhoid bacillus; in recurrent fever to the spirillum or its toxine. The bacteria of measles, rheumatism, typhus fever, yellow fever, etc., have not been traced in regard to their action on the kidneys. Taking up the subject of acute primary bacteritic Bright's disease, Bamberger's observations, made thirty years ago, were the first to call attention to the possibility of this cause; and his observations, though faulty and obscure, have been confirmed and completed by recent observers.

Mannaberg obtained from the urine of eleven patients streptococci of characteristic appearance and growth which, on cultivation and inoculation in healthy animals, immediately set up acute nephritis. Precautions were taken, of course, to exclude the presence of bacteria due to other causes. The *post-mortem* examination of animals so treated failed to show the presence of any of these bacteria in the kidneys, hence the author believes that the simple elimination of morbid germs is sufficient to alter renal epithelium and produce albuminuria, at least in animals.

In the resumé of the subject he presents the following conclusion: (1) In eleven cases of acute Bright's disease numerous streptococci were found in the urine; they disappeared from it at the end of the disease. (2) This streptococcus has never been seen in the urine of patients suffering from other diseases, or in healthy people. (3) This streptococcus can be cultivated; in this point it differs from the streptococci previously known. (4) Injection of

this streptococcus in dogs and rabbits produces intense nephritis; in rabbits it also produces endocarditis. (5) The cocci are not increased in the kidney; they influence the kidney in their passing. (6) These streptococci produced Bright's disease in the cases observed. (7) These cases of Bright's disease in which streptococci are found have a rapid and favorable course.

Salol in Pneumonia.

Bosley (*New York Med. Jour.*, Jan. 31, 1891) calls attention to the effect of this drug in rapidly reducing the temperature and promoting resolution in an unprecedented manner in pneumonia; adding the detailed report of three typical cases. He combines the drug with quinine, giving ten grains every two hours. The ordinary treatment of pneumonia is pursued in addition.

Influenza-Psychosis.

Jutrosinski (*Deutsch. med. Wochenschrift*, Jan. 15, 1891) points out the paucity of reports on this subject. He identifies "the sleeping sickness" of 1712 as an influenza epidemic, and also the epidemic of 1729–1730. No mention is made of a true psychosis produced by influenza until Rush's Account of the Influenza, as it appeared in Philadelphia, 1789–91. Since then very few observations have been made on the subject, while complications of other kinds have been very fully described. Jolly, in Strassburg, observed three groups of mental diseases produced by influenza—acute delirium, delirium tremens and genuine insanity. The etiology of influenza-psychosis is the same as the etiology of mental complications in other febrile diseases, viz., abnormalities of the circulation, hyperæmia or anæmia of the brain, the production of ptomaines, etc. The excessive use of antipyrine or antifebrin has also undoubtedly been a factor in many cases.

The prognosis of this form of psychosis is favorable; generally in a few weeks a cure is effected, unless the trouble happens to represent the beginning of a more serious mental illness. Jutrosinski reaches the following practical conclusions in regard to influenza-psychosis: (1) Mental diseases are produced by influenza in individuals with nervous dispositions. (2) Insanity can originate in every stage of influenza; however, patients at the period of convalescence are most frequently attacked. (3) All the different forms of mental disease can appear; the majority show a melancholic-hypochondriacal character. (4) Both sexes are equally attacked. (5) Patients from 20 to 50 years of age are the most frequently affected. (6) Influenza in already insane patients produces a deterioration of their mental condition.

General Considerations of the Fevers of the South.

Dock (*Med. and Surg. Reporter*, Jan. 24, 1891) calls attention to the necessity of more scientific methods of nomenclature and investigation in this department of medical study. He summarizes the following important mistakes which should always be avoided: (1) Neglect to follow the principles of pathological anatomy and etiology and the general principles underlying fever classification. (2) Arbitrary views of special morbid processes and the lack of recognition of certain conventional types. (3) A want of objective study, causing inaccurate observations and loose statements. (4) Absence of anatomical basis for theories or arguments advanced. (5) A tendency to apply novel theories of pathology or therapeutics to the subject.

Transfusion of a Solution of Common Salt with Antipyretic Results.

Kirstein (*Zeitschrift f. klin. Medicin*, 1890) reports under this title a case in which remarkable results were obtained. A typhoid patient in the forty-third day of the disease suddenly developed hemorrhages from the bowel. His temperature rose to over 104° F.; he fell into a state of collapse. After exhausting other remedies, the patient being in a des-

perate condition, the transfusion of twenty fluid ounces of a .6 per cent. solution of common salt was tried. Soon the pulse dropped from 160 to 132, the collapse disappeared, and the patient fell into a restful sleep, waking in the morning with a temperature of 99.5°. No further hemorrhages appeared; but the temperature again going up, another transfusion of twenty-five ounces was given; in the reaction following the injection of the liquid, the temperature ran up to 105.8°, then fell to 100.4°. No more transfusions were made, the patient subsequently recovering fully.

The explanation of this phenomenon was not attempted, beyond suggesting that, besides diluting the poison, the solution had a direct chemical action on the blood. This was confirmed to some degree by the discovery of an unknown substance in the urine, evacuated after the transfusions.

The Pleurisies of Childhood and Their Treatments.

Simon (*Le Progrès Méd.*, Jan. 31, 1891) emphasizes the difficulty in the diagnosis of pleurisy in children, showing that the classical symptoms are generally lacking, and that up to the age of 4 years there is great probability of the effusion becoming purulent. The prognosis is favorable in those cases in which the conditions are properly recognized and treated. In the first few days it is often impossible to diagnose pneumonia from pleurisy. Again, pericarditis can be confused with pleurisy in the neighborhood of the heart.

Simon divides the treatment into two periods: First, in the period of development where the indications are entirely medical; at this time he uses calomel in doses of three-twentieths to three-fourths of a grain for two or three days for its intestinal action. Digitalis is given also as a diuretic and antiphlogistic, together with hot milk, diuretic drinks, etc. Local treatment consists in the application of sinapisms.

The treatment of effusions constitutes the second period, being the same as for adults: thoracentesis for excessive effusion and the insertion of drainage tubes and daily lavage for empyema. It is possible that future bacteriological study will decide that pleurisies with the appearance of the pneumococcus can be treated by simple thoracentesis, while those with the appearance of streptococci and staphylococci will require the treatment of ordinary empyemas. In lavage of the pleural cavity, the use of a siphon, such as the siphon tube of Potain, instead of a syringe is advised. Boric acid solutions are preferred, with antiseptic dressings of the wound with iodoform. The necessity of the use of hygienic measures and of the administration of tonics is recognized.

SURGERY.

UNDER THE CHARGE OF

D. HAYES AGNEW, M.D., LL.D., AND J. WILLIAM WHITE, M.D.

ASSISTED BY

G. G. DAVIS, M.D., M.R.C.S., AND THOMAS R. NEILSON, M.D.

The Present Position of Antiseptic Surgery.

Dr. J. Wm. White (*Annals of Surgery*, Jan., 1891) presents an elaborate defence against the attack made upon the antiseptic method of treating wounds by Mr. Lawson Tait in the *British Med. Journal*, Sept. 26, 1890. Dr. White discusses Tait's paper from two standpoints: (1) As it denies the truth of the underlying principles. (2) As it attacks the prevailing antiseptic methods.

After showing by numerous quotations that Mr. Tait repudiates the germ theory of diseases *in toto*, he submits evidence of the definite etiological relation of particular micro-organisms to certain specific diseases. The evidence has been increasing since 1879, when

Koch first demonstrated the connection of micro-organisms with wound diseases. Ogston in 1881, Rosenbach and Cheyne in 1884, Passet in 1885, Zuckermann in 1887, have shown as distinct a causative relation of various staphylococci to acute suppuration as the yeast plant is proved to hold to alcoholic fermentation. Malignant pustule, erysipelas, acute osteomyelitis and tubercle are also examples of diseases dependent on micro-organisms. The same relation, to a less extent, has been shown in tetanus, typhoid fever, glanders, lobar pneumonia, gonorrhœa, cholera and gangrene. The relation of germs to open wounds is shown by the certainty with which easily decomposable substances, like blood, etc., may be kept sweet by simply protecting them from germ contamination. The elaborate experiments of Hauser, Watson Cheyne and others prove that Tait is wrong in stating that the blood is always teeming with micro-organisms. Healthy blood is practically sterile. It is also proved by experience that germs can either be kept from the wound (asepsis) or can be destroyed (antisepsis). A large amount of proof is submitted from the statistics of Lister, Spence, Volkmann, Dennis, Billroth, and various hospitals. It also shows that even though "pabulum" be plenty, wounds can be kept without pus or offensive odor.

In regard to the prevailing methods of antiseptic surgery, carbolic acid was found to be volatile and too slow in its action; corrosive sublimate was irritating and was precipitated by the albumen of the blood. The sero-sublimate gauze was harsh and non-absorbent. Salalembroth, a combination of chloride of ammonium and bichloride of mercury, was too easily washed out. The biniodide was too irritating. Finally, the double cyanide of mercury and zinc was evolved. It is non-volatile, unirritating, insoluble in water, and while not strongly germicidal, markedly inhibits bacterial growth, one part to twelve hundred being of efficient strength. An elaborate table, showing the good results following the use of this dressing in one hundred and ninety-five cases, in the author's practice, is given as positive evidence in favor of the latest development of Listerism.

White says: "I still feel that it is safer in a large general clinic with several assistants, and with numbers of students actively participating in the operative work, to depend upon full antisepsis rather than upon asepsis. . . . Mr. Tait discloses his real animus when he complains that for twelve years he has been 'ignored' by Lister. I am quite sure that the vast majority of general surgeons will be found to have no sympathy with either his views or his manner of expressing them. If we had never had Lister to teach us true cleanliness we should never have used antiseptics, flushings or drainage tubes to attain it. Minor details are merely the different ways of attaining the same end—asepticity."

The Treatment of Tuberculous Joints by Means of Iodoform Injections.

F. Krause (*Archiv f. klin. Chirurgie*, Bd. 41, Heft 1), in a previous article in the *Berlin. klin. Wochenschrift*, 1889, No. 49, described this method as applied to advanced cases; he has now applied it to less marked ones. He has operated on the knee joint thirty-six times, the hip joint thirteen times, the tarsal joints six times, the joints of the hand five times, and the elbow joint once. In the cases treated, early cures resulted in fifteen of the knee joint cases, four of the hip cases, one of the foot and three of the hand. Improvement occurred in nearly all. In one case of the knee, arthrectomy was performed, and in one the foot was amputated. One died from meningitis; whether the operation had anything to do with the outbreak of the general tuberculosis cannot be said. Another patient with knee-joint disease and tuberculosis of the lungs died from the latter trouble.

The best results have been obtained in knee and hand cases, particularly the latter as occurring in old people. Two suppurative cases with fistulæ were cured with good motion of the fingers; another is improving. In the knee joints one very bad case was cured with satisfactory motion. There are detailed three cases of cure in children, three to eight years of age, after three to five injections of 10 to 20 grams each; also two in adults, four injections of 20 to 40 grams each being given. Good results were also obtained in hip disease with ankylosis, when the suppuration had been marked. If operated upon before this complication develops, some motion may be obtained.

The treatment by injection is easily carried out; the patient only requires immediate

care for a short time, and the later injections may be given while he is an out-patient. The procedure varies according to the character of the case. In tuberculous abscesses a strong, large trocar is used in order to get out all the pus and caseous material possible. The joint is irrigated with a three per cent. solution of boric acid, and an injection is made of a ten per cent. mixture of iodoform in glycerine, or a combination of water, glycerine and mucilage of acacia till the cavity is nearly filled. Ordinarily this takes from fifteen to forty grams of the iodoform mixture, but eighty grams were used in one case. It is not necessary to close the trocar wound with a suture; drawing the skin aside to make a valvular opening and dressing with an antiseptic compress are sufficient.

When it is impossible to empty the contents of the cavity through the canula, an incision should be made; this should be afterward sutured. In tuberculous joints without suppuration, puncture with a trocar two millimetres in diameter is advised. The amount of the injection in these cases is small. On the withdrawal of the canula the opening is closed with the finger, and the joint is manipulated so that the iodoform may be rubbed into the granulation tissue.

Experiments have shown that the following are the points where the trocar is best introduced: Wrist joint, on each side, just below the styloid process; elbow joint, just above the head of the radius; shoulder joint, immediately external to the coracoid process or to the extremity of the spine of the scapula. For the hip joint, the patient being flat on the back, the trocar should be thrust in perpendicularly just above the trochanter major, and slightly in front of the median line, until the bone is reached. The slightest amount of flexion, outward rotation or abduction must be avoided; the best position is adduction and slight inward rotation. The limb now being strongly abducted, the point of the trocar is pushed upward, when it will strike between the head of the femur and the rim of the acetabulum. In adults this requires a canula seven to seven and a half cm. long; in children a shorter instrument will answer. For the knee joint the puncture should be made immediately below the patella; for the ankle the trocar should be entered directly beneath the malleoli; its point should then be directed upward.

A New Indication for the Wladimirow-Mikulicz Operation.

L. Rydygier, in the *Archiv f. klin. Chirurgie*, Bd. 41, Heft 1, describes a case in which he performed this operation. The indications that have been given for its performance are as follows: (1) Cases of caries of the foot, in which the disease is limited to the calcaneum, astragalus and ankle joint. (2) Where there is extensive loss of the soft parts of the heel. (3) Wounds (such as gunshot) in which the heel is injured (Mikulicz). (4) Malignant growths of the heel (Skifassowski). (5) Cases of badly-healed fractures of the malleoli (Renssen).

In the case here described, when the patient was ten years of age his knee was resected by Mikulicz for tubercular disease. In ten months the limb began to bend until it reached an angle of 60°; it was consequently no longer of service in walking. To correct the deformity a wedge was removed, which increased the shortening to four and a half inches. It was to correct this that the Wladimirow-Mikulicz operation was done. The result was very satisfactory, notwithstanding the fact that all of the shortening was not corrected.

Ligature of the Long Saphenous Vein for Varices of the Leg.

Trendelenburg (*Beiträge z. klin. Chirurgie*, vii., 1) discusses the treatment of those cases in which the varicose enlargement affects the saphena vein and its branches. In each case one must assure himself whether or not the enlarged main trunk of the saphena is the only outlet for the affected vessels. When there are two large outlet veins they must either be ligatured separately or tied above their point of junction. The most suitable place to ligate is at the junction of the lower and middle third of the thigh; the vein is to be laid bare, the limb elevated, and the vein tied with two ligatures, the vessel then being divided.

While the varicosities re-appear somewhat when the patient is erect they are much improved, and ulcers heal quickly. Some cases are described and remarks made on the various other operations employed.

Infection from Catgut.

C. Brunner (*Beiträge z. klin. Chirurgie*, Bd. vi.) first discusses the various methods of preparing and preserving catgut. Cases are recorded by Kocher, Zweifel, Volkmann and others in which infection was traceable to the carbolized catgut employed.

The results from bichloride catgut have been excellent. In four years' use in the clinic at Zurich no evil results could be traced to its use. Concerning absorbability, all prepared catgut lasts longer than the unprepared, and that made with chromic acid or dry heat (Reverdin) lasts the longest.

On examining catgut, bacteriologically, that which has been prepared by corrosive sublimate or Reverdin's (heat) method was found absolutely sterile; but the carbolic acid, chromic acid and juniper preparations were often found to contain non-pathogenic microorganisms.

After experimenting with ligatures made from an animal affected with splenic fever, Brunner advises the following method of disinfection: The raw gut is to be washed with a brush and potash soap, and then, either directly or after a half hour's immersion in ether, placed in 1 to 1,000 aqueous sublimate solution. It is preserved in sublimate 1 part, alcohol 900 parts, and glycerine 100 parts.

E. Braatz (*Beiträge z. klin. Chirurgie*, Bd. vii.) advises the abstraction of the fatty matter of the catgut, to allow the disinfectant to penetrate. After some reference to Brunner's work he states that while catgut prepared without previous removal of the fat is usually free from germs, it is better to immerse the raw catgut in ether for one or two days, next put it in sublimate solution 1 to 1,000 for twenty-four hours, and finally store it in absolute alcohol. Instead of this one may sterilize it by dry heat (140° for four hours) as advised by Reverdin, and then keep it in alcohol.

Treatment of Old Luxations of the Shoulder.

The rotation-elevation method which Kocher (*Deutsche Zeitschrift f. Chirurgie*, Bd. xxx) advised in 1870 for recent luxations is, as the author points out, an excellent one for the reposition of old dislocations. The best proof of this is seen in his results. Out of twenty-eight cases, twenty-five were replaced without narcosis, and five of these were of over four months' standing. The technique of the procedure, with new details, is given, accompanied by three characteristic illustrations. The first step consists in carrying the abducted elbow toward the median line and pressing it against the abdomen; next, flex the elbow at a right angle and rotate the arm outwardly until the forearm points directly away from the side. The lifting out of the head of the humerus can be aided by a compress placed beneath the axilla and by pulling on the arm; finally, while the arm is still held in the position of outward rotation, the elbow being in the median line, it is raised forward and upward as high as it will go, the arm being then allowed to rotate gradually inward until the hand is placed on the opposite breast (inward rotation).

The efficiency of Kocher's method depends on the thoroughness with which it loosens all adhesions. The subcoracoid is the most frequent of old luxations, and Kocher found in one autopsy, as well as in eight cases on which he operated, that the adhesions were strongest between the edge of the glenoid cavity and the anatomical neck. There was also contraction of the rent in the capsule, and adhesion between the head of the humerus and the anterior edge of the glenoid cavity. This method relaxes the capsule, lifts it away from the glenoid cavity, and opens the capsular rent. The cause of the above-named adhesions rests upon the fact that the strong band between the coracoid process and the tubercle of the humerus is not torn. This ligament is analogous to Bigelow's Y ligament of the hip joint.

Kocher's method is a safe one. In only three cases has fracture occurred, one being of the shaft, and two of the neck of the bone. In one case the head was allowed to remain in its attached position, and the stump of the shaft was placed in the glenoid cavity with good results. Three cases in which the method failed were found on operation to be irreducible from the existence of fracture of the tubercle or neck, or from other bony changes.

The Nature of Lupus and its Relation to Tuberculosis.

Jonathan Hutchinson (*Lancet*, Jan. 17, 1891), in answer to the question, "Is lupus of bacillary origin, and are the various associated affections, which differ more or less from lupus, cognate with it?" states that from the side of clinical observation it seems highly improbable that all lupus is the result of contagion, and much more likely that it usually begins in inflammatory action made peculiar by the special proclivities of the individual. No symptoms will enable any one to recognize with certainty all cases of lupus. We can recognize the well-marked examples, but not the many ill-marked ones. When a chronic inflammation of the skin or mucous membrane, not due to syphilis, shows a persistent tendency to spread at its edges, to produce satellites near to it, and to leave a condition of scar behind it, such a process is practically one of lupus. The infective edge and scar are essential. Another condition, which, when found, is diagnostic, is the presence beneath a thin layer of epidermis of a semi-translucent granulation material. The adherent scales and scabs and the situation of the sore are also diagnostic signs. Lupus vulgaris is not a disease which attacks infants or young children. It rarely occurs before puberty. We often see it begin at or after middle life, and in a few instances its subjects are advanced in years. It then displays peculiar features, and may be ranked with senile scrofula (Paget).

Nothing is less common than to see a lupus patient pass into phthisis, and there is no tendency shown to infect other parts. If its cause is a bacillus, this must be a selective one, keeping in the tissue in which it had its first development. One would hesitate to say which lupus was most allied to, tuberculosis or cancer.

Bacilli have not yet been discovered in lupus erythematosus, yet it is more frequently associated with tuberculous conditions than lupus vulgaris. In its earliest stages lupus is not to be distinguished from chilblains, or, if on the nose, from acne. When the lesions are multiple they occur in its earliest stage. Since syphilis in its tertiary stage can resemble lupus perfectly, and as it is only a chronic infective inflammation deriving peculiarity from the specific antecedents of the patient, and having nothing to do with bacilli, it is reasonable to suspect that lupus itself may be a chronic inflammation made peculiar by the vital proclivities of the patient.

Are there any diseases apart from lupus which are supposed to be in association with first, scrofula, and second, specific tuberculosis? Scrofulous ulcers begin beneath and then involve the skin; lupus begins in the skin itself. If lupus is bacillary, why do not the glands become infected? And if gland struma is lupoid, why does it not affect the skin? In the larynx, lupus and tuberculosis are two easily diagnosed affections.

Bacilli have not been demonstrated in the lichen scrofulosorum of Hebra, but they have been discovered in lupus verrucosus. That these latter lesions occur in persons not otherwise scrofulous is admitted by all, and, as a rule, if they are efficiently protected from exposure, they are readily curable.

To sum up: There is no evidence that lupus ever begins from the implantation of tuberculous matter; it is only exceptionally associated with tubercle in viscera, and it does not cause gland disease. There are also other affections of the skin which are more closely associated with tubercle. Its remarkable preference for certain regions, as the face, and the existence of a distinct cause, as cold, and, indeed, all the evidence seems to favor the belief that lupus is a specialized form of chronic inflammation rather than the result of infection.

Discussion on Tetanus.

At a recent meeting of the Royal Military Surgeons of Vienna (*Wiener klinische Wochenschrift*, Jan. 8, 1891) Faulhaber gave a demonstration and exhibited cultures of the tetanus bacillus in its bristle shape and flattened pin form, the discovery of which was reported by Rosenbach, and its occurrence in garden mould and in wood splinters hitherto pointed out. Kitaso's results in the culture of the bacillus on blood serum and the coloring methods received proper mention.

Hahart, in discussion, emphasized the importance of the prevailing views concerning tetanus, especially in military surgery. The results of recent studies and the lessons of antiseptic surgery offer a ray of hope in the treatment of wound tetanus.

Janchen spoke of the disease as a neurosis, and thought that its treatment was more satisfactory in civil than in military life. Dr. Lewandowski called attention to the fact that the earliest description of the disease emanated from a German, Dr. Steinheim, in 1830, and should not be accredited to Dance, as claimed by the French, who described, in 1831, an intermittent tetany, associated with malarial intoxication. Allusion was made to the fact that, as shown by Chovstek, the symptoms of tetanus present themselves with some irregularity; in one instance a particular symptom may be absent throughout the attack, while in another it may be observed only at certain times in the course of the disease, and only in the rarest cases do all the classical symptoms manifest themselves in common. With regard to the electrical reactions, Lewandowski found a marked increase of the normal nerve excitability to the galvanic current. The sensory reactions were not constant in character.

Cystoscopy.

An excellent article upon this subject, by Malherbe, appears in *Le Progrès Médical*, Jan. 3 and 10, 1891. After pointing out the value of visual examination in the diagnosis of many diseases, the importance of its application to the study of affections of the hollow organs is set forth. The problem of the illumination and inspection of such organs Malherbe considers as absolutely settled, so far as the bladder and urethra are concerned; and although the instruments employed may not be easy to manage, he believes that in a few years the cystoscope will, like the ophthalmoscope, be of common use in the hands of specialists. A brief history of endoscopy, following that given by Fenwick, in his book entitled "The Electric Illumination of the Bladder and Urethra," is sketched, the various steps being traced from the earliest invention—that of Bozzini, of Frankfort, in 1805, to the adaptation of electrical illumination by Nitze, in 1877. The instruments now available and employed in the examination of the bladder are those of Nitze or Leiter, and the megaloscope of Boisseaux de Rocher. The megaloscope, according to Malherbe, possesses the advantage over the Nitze-Leiter cystoscope, in that it enables the observer to see a much larger extent of surface, one-third to one-half of the mucous membrane of the bladder being visible at once, while with the cystoscope it is necessary to turn the instrument in a number of different positions, or even to make use of a series of instruments having the fenestra at different situations, in order to obtain a complete view of the various parts of the surface.

As to the cases in which the cystoscope will be of the most service, the writer mentions first those of foreign body in the bladder; next those of tumor, where the growth is small and its presence cannot be ascertained by means of catheterization and rectal touch; and, lastly, the instances where it is desired to examine the orifices of the ureters. In the latter it is possible to determine, in cases of hæmaturia or pyuria, not only whether the difficulty arises in the kidneys or their pelves, but even by observing from which ureter the blood or pus escapes, to ascertain which organ is the seat of disease. In cases of bladder disease, when a satisfactory diagnosis can be made without the use of the cystoscope, he considers its employment uncalled for, and that one is not justified in making the patient submit to an investigation, which is always a little painful, and, like other explorations of the urinary organs, capable of doing mischief.

On the Frequency of the Participation of the Posterior Urethra in the Gonorrhœal Inflammatory Process, Together with Some Remarks on Its Treatment.

As indicative of the frequency of the occurrence of posterior urethritis, Letzell (*Centralblatt f. die gesammte Therapie*, Jan., 1891) states that he found that in fifty-three patients suffering with a first attack of gonorrhœa, and coming under his observation from seven to ten weeks after infection, only four were met with in whom the posterior urethra was not affected.

The treatment employed by Letzell consists in instillations into the deep urethra, which can be conveniently made by means of a small perforated bulbous sound, such as Guyon's, the calibre of which should be from twelve to fifteen F. To this an ordinary small syringe is attached by means of a piece of rubber tubing. The medicaments recommended are, first, a ten per cent. solution of resorcin, of which four or five drops are injected while gradually withdrawing the instrument. The injection may be repeated daily, and is said to cause practically no irritation. In many cases cure will be effected in about three weeks. If no improvement is observed, the substitution of a three to five per cent. solution of nitrate of silver is recommended, the instillations being made every two or three days. Letzell made in a series of cases some trials with five to ten per cent. solutions of sulphate of thallin, with the result that it was not so prompt as resorcin, and caused some irritation. Before giving these deep injections, the patient must be required to empty his bladder.

The use of the prostatic antrophor is also recommended. These are medicated with resorcin, five per cent., and sulphate of zinc, one-half per cent., or with resorcin and tannin. These possess the advantage that, when necessary, their introduction can be intrusted to some patients themselves, after preliminary instruction.

The Treatment of Furunculosis.

According to Veiel (*Centralblatt f. die gesammte Therapie*, Jan., 1891) the indications in the treatment of furunculosis fall under the four following heads:

(1) The destruction of the pus cocci which have invaded the skin before they have caused necrosis of the tissues. (2) Necrosis having occurred, to hasten as much as possible the pushing out of the necrotic plug, together with its contained cocci. (3) To prevent the further development of furuncles through infection of the region by cocci escaping from the suppurated furuncles. (4) To put the system in a condition to resist as much as possible the invasion of pus cocci.

The first of these can rarely be successfully met, because the inflammatory process has so far advanced that the gland orifices are obstructed, and the entrance of antiseptics thereby prevented. For the second and third, Veiel favors very decidedly warm poultices, wet with a 1–1000 bichloride solution, and bathing of the skin with a four per cent. solution of boric acid, the affected area being dressed at night with zinc ointment, to which boric acid, in the proportion of four per cent., is added. Only those furuncles which are slow of development are opened with the knife. He considers the too early squeezing out of the slough as injurious. The patient must exercise the utmost cleanliness as to his bed linen and clothing, changing them frequently. The last indication requires the improvement of the general health by means of nourishing food and the administration of iron.

On the Treatment of Psoas, Iliac and Other Large Tubercular Abscesses by Hot Flushing without Drainage.

In the treatment of these abscesses the methods commonly employed are frequently found to be far from satisfactory. The great difficulty, says Arthur E. Barker (*British Med. Journ.*, Feb. 7, 1891) lies in securing their complete evacuation. This latter implies not only the removal of the fluid contents, but also of the solid or semi-solid, caseous or calcareous debris, and of the lining of half-organized exudation material, formerly called the

"pyogenic membrane," which, if left behind, is capable of indefinitely continuing the process. Outside of the abscess is the wall, of more or less perfectly organized fibrous tissue, which must be looked upon as a natural barrier limiting the tuberculous focus, and preventing its spread by infection.

Barker describes his method of treating these abscesses by explaining its application to a psoas abscess. A two-inch incision is made through the sound parts at the lower end of the swelling. Through this is inserted a hollow gouge connected with a three-gallon reservoir of hot water (at a temperature of 105° to 110° F.), by means of a rubber tube some six feet long. The reservoir is elevated about five feet above the operating table. The water runs with force to the bottom of the cavity, and on flowing back carries out through the incision the contents of the abscess. Gentle scraping with the flushing scoop dislodges the solid caseous matter. Then the walls of the cavity are methodically scraped, and the lining thus removed is carried out by the water. Scoops of different lengths are used, so that all the deeper parts can be reached. When the water returns clear, the instrument is withdrawn, the excess of water is squeezed out, and if the deeper parts are accessible they are dried off with sponges. Next, two or three ounces of fresh iodoform emulsion are poured into the cavity, and the stitches are inserted into the edges of the wound. Before knotting the latter the excess of the emulsion is squeezed out. The wound is then closed without the insertion of a drainage tube, and a simple dressing of dry salicylic cotton is applied. Barker considers this method superior to that of aspiration, followed by the injection of iodoform emulsion.

He points out several reasons for choosing hot boiled water for the flushing. If carbolic acid solutions be used instead there is risk of intoxication. The same is true of the other germicides. A stream of hot water under pressure will both peel off the shreds of tissue, and tend to prevent oozing of blood and, in addition, will prevent shock. No germicide can be used in the quantity that plain hot water can. After its use, he sees no reason why a limited amount of a germicide should not be put into the cavity to act on any tubercular foci accidentally left. He selects iodoform because he is one of those who believe in its beneficial effect in tubercular troubles.

The most important innovation in his method is, he considers, the getting rid of the drainage tube.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D.,

ASSISTED BY

DAVID CERNA, M.D., PH.D., AND THOMPSON S. WESTCOTT, M.D.

The Physiological Action of the Principles of Parsley.

An experimental study of the active principles of parsley, with special reference to their therapeutical application, has been made by L. E. MOURGUES and J. V. LABORDE (*La Tribune Médicale*, Jan. 8, 15 and 22, 1891). In their experimentation the authors employed chiefly *apiol* and *cariol*, this latter substance having been isolated by Mourgues. Some experiments were also made with the *apioline* of Chapoteaut. *Apiol* was found to be the most poisonous of the substances used.

Cariol produced a peculiar uterine vascular congestion, excessive excitation, convulsions, paralysis and finally death from respiratory failure. Apiol likewise produced excitability of the motor nervous system, increased reflexes, convulsions, general paralysis, muscular tremors, salivation, some dilatation of the pupil, and finally death by asphyxia.

Upon the circulatory apparatus, cariol and apiol, with few exceptions, have identical actions. An intravenous injection of 1 cc. of apiol is followed by an almost immediate rise of arterial pressure, due to increased cardiac action, and stimulation of the vaso-motor centres in the medulla oblongata. Continued injections caused a marked lowering of the arterial pressure, which, if the doses has been sufficiently large, never returns to its normal level. With cariol the increase of the blood pressure is less marked and more slowly produced.

Both apiol and cariol produce identical phenomena on the muscular and nervous systems, a condition of excitability; but under cariol the general excitability and the clonic convulsions predominate. The heart resists their action for a long time, although finally there is a depression in the energy of the cardiac beat.

The action of both principles appears to be chiefly confined to the reflex and vaso-motor centres.

The general results obtained from the physiological mechanism of this action, with special reference to phenomena of functional hyper-excitability produced by the substances under study, are those of a peculiar congestive vascular dilatation, particularly of the genito-spinal system. The action in general appears so far to confirm the old empirical notions with regard to the aphrodisiac and emmenagogue properties of parsley and its principles.

The general conclusion, therefore, from a practical point of view, is that both cariol and apiol are naturally indicated in certain cases of genito-spinal atony, and especially in the treatment of dysmenorrhœa.

Galega as a Stimulant to the Secretion of Milk.

The galactogenous properties of galega have of late been specially studied by Carron de la Carriére (*Bull. et Mém. de la Société Méd. Pratique de Paris*, Feb. 1, 1891). In the eight observations reported by Carriére it was found that the drug notably and rapidly increased the secretion of milk in nursing women. This increase usually occurred in from one to two weeks after the administration of the drug, and its effects upon the nursing woman were followed by a corresponding increase in the weight of the child. The drug was well tolerated, and no untoward after-effects were produced. In some instances it seemed to improve the appetite of the woman, and in general the nutrition of the child was increased.

Under the action of the drug the secretion of milk was abundant, rich in the aqueous elements, with an apparently proportionate increase in the number of milk-globules.

The preparation most commonly employed in the cases reported was the aqueous extract in divided doses of from fifteen to sixty grains per day. This extract is perfectly soluble in water, but can be given in wine, in combination with syrups, or in the form of pills. An infusion can be prepared by placing 750 grains of the powdered leaves in two pounds and eight ounces of boiling water. This infusion, which exhibits the aromatic odor of the plant, can be sweetened with sugar or with some medicinal syrup.

Rhubarb in the Treatment of Oxyuris Vermicularis.

Sidney Martin (*Gaz. hebd. des Sciences Méd. de Montpelier*, Jan. 10, 1891; *Lyon Médical*, Feb. 8, 1891) affirms that it is very difficult to free children from oxyuris vermicularis. Whatever the beneficial results obtained from the ordinary methods of treatment, as for instance the disappearance of the irritation at the anus, the irregularity of the stools and disturbances of sleep persist, rendering it probable that the parasites infest portions of the large intestine unreached by the common rectal injections.

In a large number of observations, the author has seen good results after the employment of small doses of rhubarb. The drug appears to regulate the movements of the intestines, and this action is so pronounced that it has been unnecessary to apply any injections.

He advises the following formula:

℞.	Tincture of rhubarb	20 drops.
	Carbonate of magnesium	3 grains.
	Tincture of ginger	1 drop.
	Water	3 drachms.

This mixture to be given three or four times a day, according to the effects produced in the intestines.

The author has not determined whether rhubarb acts as a vermicide, or whether it simply causes the worms to be detached from the intestines and expelled in the stools.

Retinol as a Dissolvent.

In a note, presented to the Société de Médecine Pratique, F. Vigier (*Bull. et Mém. de la Soc. de Méd. Prat. de Paris*, Feb. 1, 1891) speaks highly of retinol as a dissolvent for active substances, such as phosphorus, salol, iodol, naphthol, aristol, camphor, chrysophanic acid, cocaine, codeine, strychnine, carbolic acid, creasote and others. Combinations can be prepared in the form of ointments, capsules or solutions. Retinol, being antiseptic, non-irritant and incapable of alteration even on exposure to air, has the special advantage of dissolving a large number of antiseptic bodies and other agents employed in practical medicine.

Phosphorated retinol, for instance, has been advantageously used in the treatment of those cases for which phosphorus itself has been employed. Reference is given to the over two hundred observations made by Kassowitz, of Vienna, in the treatment of rachitis and scrofula; to cases of anæmia, chlorosis, dysmenorrhœa, uterine hemorrhages, muscular paralysis, progressive locomotor ataxia, neuralgias, neuroses, hysteria and glaucoma, treated by Delpech, Curie and Guéneau de Mussy, and to the treatment of zona, by Brocq and Duhring.

The author exhibited to the Société capsules of salolated retinol, each capsule containing two and one-quarter grains of salol, of creasotated retinol, and of pure retinol, each capsule of this latter preparation containing three and three-quarters grains. The retinol-salol has been employed in the treatment of urinary troubles; the retinol-creasote in affections of the respiratory tract, such as bronchitis, phthisis and others, while beneficial results have been obtained by the use of the pure retinol in the treatment of blennorrhagia.

Treatment of Bright's Disease.

The *Rev. de Clin. et Therap.* publishes the following methods for the treatment of Bright's disease:

(1) *Classic Method.*—The climateric prescription consisted in the avoidance of dampness and sudden changes of temperature. As to diet, rich or irritant articles of food were avoided, as were also eggs. A pure or mixed milk regime was followed, and such articles as wine, whiskey, liquors and beer were entirely prohibited.

(2) *Senator's Method.*—All white meats and pork are allowed, and the use of vegetables and starchy articles of food, fruits, fats and milk advised. Senator also recommends the employment of wine mixed with water.

(3) *Semmola's Method.*—The author observes the preceding treatment and besides advises the employment of the following solution to be given in the course of the twenty-four hours:

Iodide of potassium	15 grains.
Phosphate of sodium	30 grains.
Chloride of sodium	75 to 90 grains.
Water	20 ounces.

(4) *Bamberger's Method.*—Besides a milk diet, tonics and ferruginous remedies are employed. The author highly recommends the following preparations: (I) Pills of perchloride of iron. Of these pills three to six are given per day. Each one contains:

Perchloride of iron	⅓ of a grain.
Pulverized ményanthe (Buckbean)	¾ of a grain.
Extract of gentian, a sufficient quantity.	

(II) Pills of the sulphate of iron, after Wiethe:

Sulphate of iron . . . . . 75 grains.
Bicarbonate of soda . . . . . 75 grains.
Extract of taraxacum, a sufficient quantity.

To be divided into sixty pills, of which three are given in the morning and three in the evening.

(III) Decoction of cinchona bark. Five drachms of the bark are placed in six and a-half ounces of boiling water for a period of half an hour. The decoction is then sweetened with five drachms of the syrup of bitter orange peel. Of this preparation, according to Wiethe, a dessertspoonful can be administered every two hours.—*Le Mercredi Médical*, Jan. 14, 1891.

Treatment of Diphtheria of the Pharynx.

Kusnecow (*Rev. Hebd. de Therap.*) has, in a series of observations on the treatment of diphtheria of the pharynx, had unsatisfactory results with resorcin, tannin and the sulphate of copper. A solution, composed of phenic acid, one part; camphor, one part; and olive oil, four parts, was applied locally immediately after the membranes of the fauces were involved. The applications were repeated from six to eight times a day. No good effects, however, followed this treatment. According to the author the best topical applications are oil of Mars in combination with borax in glycerine and the following mixture:

℞. Menthol . . . . . 66 grains.
Alcohol, sufficient to dissolve.
And add
Naphthaline . . . . . } of each. . . . . 150 grains.
Essence of turpentine . . . }
Glycerine.

With this solution the affected parts are painted every two or three hours. The liquid must be shaken before using.

For gargles, lime-water is employed. Internally, the author uses antipyrine with sulphate of copper, suspended in peppermint water. A purgative should precede all treatment. —*La Pratique Médicale*, Jan. 6, 1891.

Salicylate of Naphthol β.

Yvon (*Le Progrès Médicale*, Jan. 3, 1891) discusses the salicylate of naphthol β, having as synonyms, betol, naphthol and salinaphthol. It is a combination of salicylic acid and naphthol β which has been used as a substitute for naphthol β. It is a white, crystalline powder, odorless, insoluble in water, slightly soluble in alcohol, in the proportion of 1 to 300 parts. As an antiseptic the salicylate of naphthol is equal to the naphthol itself. It is easily administered, especially in diseases of children, and it does not cause distress to the stomach. It may be given in the same cases for which naphthol is employed, and in the same doses, fifteen to forty-five grains per day. Lozenges of eight grains each can be ordered, two to six a day.

℞. Salicylate of naphthol β . . . . . 7½ drachms.
Bicarbonate of soda . . . . . 4 drachms.
Divide into twelve powders. One to three per day.

℞. Salicylate of naphthol β . . . . . 2 drachms.
Calcined magnesia . . . . . 26 grains.
Make twelve lozenges. Six to ten per day.

℞. Salicylate of naphthol β . . . . }
Prepared chalk . . . . . } of each, 1½ to 2½ drachms.
Calcined magnesia . . . . . }
Make ten powders. One to four per day.

MIXTURE FOR CHILDREN.

℞. Salicylate of naphthol β . . . . . 15 to 30 grains.
Syrup of orange flowers . . . . . 7 drachms.
Gum water . . . . . 5 drachms.
A dessertspoonful in twenty-four hours.

The salicylate of naphthol can be associated with salol and the salicylate of bismuth.

℞. Salicylate of naphthol β . . . . } of each, 2½ to 4 drachms.
Salol . . . . . }
Bicarbonate of soda . . . . . 15 drachms.
Make thirty powders. Three to six per day.

℞. Salicylate of naphthol β . . . . } of each, 2½ drachms.
Salicylate of bismuth . . . . . }
Make twenty powders. Three to six per day.

SPERMIN AND PIPERAZIDIN.

Under the name of "Piperazidin" (*Therapeutische Monatshefte*, Jan., 1891), a proprietary preparation has been put upon the market as a substitute for spermin, the active principle of the remedy made famous by the recent testimony of BROWN-SÉQUARD. Spermin is an organic base, first isolated by Schreiner in 1878, but known since 1853 under the form of its phosphate, which was observed by Charcot and Robin in the spleen in leukæmia, and has been since then familiarly known as "Charcot's Crystals." Piperazidin occurs in the form of colorless, easily soluble crystals, with no corrosive properties. It forms with hydrochloric acid an easily soluble crystallizable salt. A. W. VON HOFMANN has made a careful study of this new product, and recognizes it as diæthylendiamin:

$$C_2H_4<\begin{matrix}NH\\NH\end{matrix}>C_2H_4.$$

The properties of this substance differ so decidedly from those of æthylenimin (spermin) that this investigator thinks the two drugs cannot be identical. The determination of the physiological action of piperazidin rests at present upon the single experimental study made by Bock in the Berlin Pharmacological Institute; and in none of his observations could an exciting action be observed. Several times after subcutaneous injection in rabbits a slight momentary acceleration of the pulse was produced, but this could most reasonably be attributed to the operation itself. Rise in the blood pressure never occurred. After the direct injection of a watery solution of the free base, the blood pressure fell decidedly after each injection, but rose again without quite reaching the original height. These results differ essentially from those obtained by Tarchanow in his experiments with Poehl's spermin. Another property of piperazidin, however, may prove the drug to be of considerable therapeutic value. According to the statements of the manufacturer, this drug in watery solution combines with twelve times more uric acid than the carbonate of lithium. The resulting urate of piperazidin is seven times more soluble than urate of lithium in water at 62⅝° F., or, in other words, one part of urate of piperazidin is soluble in fifty parts of water, while urate of lithium requires 368 parts of water. Even in great excess of uric acid no acid salt is produced, the compound still forming as the neutral salt.

ANODAL DIFFUSION AS A THERAPEUTIC AGENT.

FREDERICK PETERSON (*New York Medical Record*, Jan. 31, 1891) discusses the cataphoretic power of the anode, and describes his method of exact dosage. An appropriately shaped electrode of platinum or nickel-plate is covered with a piece of tissue or filtering paper or linen. Upon this is dropped the solution for diffusion. The medicament thus forms a capillary layer between electrode and skin, and its quantity is known. Five to twenty milliampères for from five to fifteen minutes, according to circumstances, are required.

Local anæsthesia for neuralgias and cutaneous operations is readily produced by a ten to twenty per cent. solution of cocaine, without any constitutional effects. Aconitia produces deep analgesia, which is accompanied with severe smarting around the edges of the anæsthetized area; combination with cocaine prevents this hyperæsthesia. Three or four drops of a one per cent. solution of helleborin give a deeper and more lasting anæsthesia than cocaine, without any constitutional effects. Ouabain and strophanthin (Arnaud's), in dose of $\frac{1}{250}$ grain or more, are efficient. One or two drops of chloroform produce deep analgesia, but this is followed later by vesication—a useful double effect in certain cases. Topical medication, especially with iodine or lithium salts and mercurials, is well adapted for cataphoresis. The method is valuable also for diagnostic purposes, especially in hysterical conditions.

The Sozoiodol Preparations and Their Therapeutic Uses.

Nitschmann, in a paper read before the Eleventh International Medical Congress, sums up our present knowledge of this drug and its derivatives. Sozoiodol, or diiodparaphenol sulphuric acid, is composed of fifty-two per cent. iodine, twenty per cent. carbolic acid, and seven per cent. sulphur, in the form of sulphuric acid. It forms a number of characteristic salts, which are now manufactured under the names of sozoiodol-natrium, -kalium, -zincum, -hydrargyrum, -magnesium, -lithium, -aluminium, -plumbum and -argentum. Of these the first four possess decided therapeutic value.

The experiments of Langgaard and of Luebbert have shown that the staphylococcus aureus is destroyed by a two per cent. solution of the sodium of potassium salt, or one per cent. of the zinc compound. For the disinfection of green pus, four per cent. and two per cent. solutions, respectively, were required; while the mercuric salt, in its antiseptic power, nearly equals bichloride, 1-50,000 preventing the growth of the staphylococcus, and 1-4000 being efficient for disinfecting green pus. The sodium salt is soluble to eight per cent. in cold water, the zinc to two per cent., and the mercuric, in the presence of sodium chloride, to twenty-five per cent. It has been shown that the sodium salt may be administered to rabbits in the dose of fifteen grains *per diem* without any toxic symptoms; while a large dog readily stands seventy-five grains. Subcutaneously seven and a half grains of the sodium or zinc salt have been exhibited to rabbits without injury, but the mercuric salt is decidedly poisonous, one and eight-tenths grains causing death in collapse. By the mouth the last-named compound causes vomiting and, if retained in sufficient quantity, death from enteritis and nephritis; but it does not seem to be absorbed by the skin. Dusted upon fresh wounds the sodium salt is absorbed in three hours, the more insoluble potassium salt in twenty-four hours, and both may be found in the urine after fifteen hours. While sozoiodol-natrium can be deprived of its iodine by sulphuric acid and chloroform (Cohn, *Inaug. Dissert.*), this decomposition cannot occur in the system, for no traces of potassium iodide can be detected in the urine or tears. It therefore probably circulates partly unchanged and partly in combination with sulphuric acid.

Therapeutically these preparations have been extensively tested by Fritsche and others in diseases of the nose and throat, the different salts seemingly possessing the combined actions of sozoiodol and the metal. The mildest is sozoiodol-natrium, which is readily soluble and has a marked effect on the respiratory mucous membranes. In thickening and scantiness of secretion, sozoiodol-kalium is commended, and has proved invaluable in chronic catarrhs with profuse secretion, even when the exciting causes cannot be removed. Kuhn states that for ozæna these two salts are the most satisfactory remedies known. The zinc salt is astringent and irritant. It makes a good astringent gargle, and in a three to five per cent. solution, or dusting powder, is valuable in rhinitis sicca and hypertrophica. The mercuric salt has been tested as a general antiseptic in all forms of surgical dressings. In syphilitic affections and many parasitic skin diseases, this preparation is praised by Lassar, Seiffert and Schwarz. In the treatment of gonorrhœa and vaginal and cervical catarrhs, the remedy promises to be a valuable acquisition. A single case of successful treatment of diabetes with the sodium salt is quoted.

An Experimental Study of Ergot.

Hemmeter (*Medical News*, Jan. 31 and Feb. 7, 1891) publishes a valuable experimental study of the physiological action of ergot. His conclusions may be summarized as follows:

(1) In producing contractions of the uterus, ergot acts primarily and essentially upon the lumbar cord, and is therefore a centric, not peripheral, stimulant. (2) Ergot produces intestinal peristalsis by direct action on the cord. (3) Ergot produces constriction of the arterioles and capillaries in the omentum and ears of rabbits and in the frog's web, only as long as the cord and vagi are intact. Its action is therefore centric, not peripheral. (4) (*a*) Ergot reduces the number of pulse beats; (*b*) in the isolated frog's heart, it reduces the force of the contractions; (*c*) it exerts a local poisonous influence on the heart of the batrachian, as well as on that of the mammal, when injected into the jugular vein; (*d*) its main action, however, is exercised through the influence of the central nervous system; (*e*) it raises arterial pressure when injected into the jugular veins of mammals; the rise is preceded by a primary depression due to the local action on the heart; (*f*) it is impossible at present to decide whether this local action is due to an influence on the heart-muscle or its ganglia; (*g*) it is probable that the rise of pressure is due to the action on the arterioles. (5) To explain the fall in temperature, he suggests the combined effect of (*a*) reduction of the number, force and tonicity of cardiac contractions; (*b*) diminution of general metabolism; (*c*) stimulation of the cortical heat centre; and (*d*) reduction of oxidization processes (closely associated etiologically with (*a*), as suggested by experiments of Landois and Ammon in long-continued stimulation of the pneumogastric).

Urethan in Tetanus.

Maresti (*Wiener med. Wochenschrift*, No. 5, 1891, from *Raccoglitore medico*, Sept. 30 1890), in a case of traumatic tetanus, in which, in spite of an energetic chloral treatment, the trismus did not yield, exhibited urethan in the dose of thirty to forty-five grains daily, in watery solution. After several days all symptoms of tetanus had disappeared. This use of urethan was first recommended upon theoretical grounds by Coza, but until now has never been practically tested.

Cradine, a New Peptic Ferment.

Mussi (*Wiener med. Wochenschrift*, No. 5, 1891, from *Giorn. di chimica, farmacia*, Nov., 1890) has obtained from the leaves and stems of ficus carica, by incision, a white exudate which is only partially soluble in water. The insoluble residue is, however, soluble in presence of dilute acids or alkaline salts, and from this solution has been obtained a new ferment-like principle, which, in the presence of hydrochloric acid, acts more energetically than pepsin, while it is also efficient in alkaline solutions. Carbohydrates are not affected by it, but its action on fats has not yet been studied. After the digestion of albumen, the ordinary tests for peptones can be obtained; so that it seems probable that in this substance, cradine, a new peptic ferment has been discovered.

Wine Lemonade.

Following the report of a lecture of Dujardin-Beaumetz (Abstract, U. M. M., March, 1891), in which this clinician speaks of the value of abundant drinks, especially a "vinous lemonade," to favor diuresis in typhoid fever (*Bulletin gén. de Thérapeutique*, 1890, ii, p. 529), Laillez (*Bulletin gén. de Thérapeutique*, Jan. 30, 1891) gives a formula for the preparation of this mixture:

℞.	Syrup of citric acid	2 ounces.
	Red wine	8 ounces.
	Essence of lemon	15 minims.
	Water to	2 pints.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.

ASSISTED BY

RICHARD C. NORRIS, M.D., AND W. REYNOLDS WILSON, M.D.

The Induction of Premature Labor in Hungary.

In Hungary the same conditions in regard to deformed pelves seem to prevail as in this country (*Centralbl. f. Gynäkologie*, 1891, No. 7). Osteomalacia is never seen, and other varieties of contracted pelves are rare. For this reason the induction of premature labor is not often called for. It was performed first by Semmelweiss, in 1856, on account of eclampsia. Up to the present time there have been twenty-three such operations with one death. In those which were done on account of contracted pelvis, eighteen in number, there was not a bad result. Of the twenty-three children, fourteen were born alive, six dead, and in regard to three there was no report.

Obliteration of the Vaginal Outlet after Labor.

In the *Centralblatt f. Gynäkologie*, No. 7, 1891, is an abstract of an article by Schildkröt (*Russische Medicin*, No. 5, 1890), who reports the following case: A Jewess, 36 years of age, had given birth to eleven children. The last labor was difficult, and resulted in the delivery of a dead child which was extracted by a midwife. There was severe hemorrhage with unconsciousness after the labor, and in the puerperium there was fever with severe pain in the genitalia. In spite of these unfavorable symptoms the patient recovered. Some weeks later the husband found it impossible to have connection with his wife.

On examination the opening of the vagina from the urethra downward was found to be entirely closed by adhesive inflammation. A transverse incision was made through which the finger could be introduced, and partly in this way, partly by forceps, the adhesions between the vaginal walls were torn apart. The uterus was found free from adhesions. The vagina was tamponed with iodoform gauze, and after the fourth day a cylindrical speculum was daily introduced. On the eighteenth day after the operation the patient was entirely restored.

Amputating Amniotic Bands of Hitherto Undescribed Origin.

Kuestner (*Ztschr. f. Geburtsh. u. Gyn.*, Bd. xx., Heft 2) reports the case of a child with intra-uterine amputation of the fingers and toes, which was due to amniotic bands of an origin not hitherto pointed out. Instead of being inflammatory in nature, in the shape of adhesive bands passing from the fœtal skin to the amnion itself, the constricting bands in this case had their origin in a rupture of the amnion in the second month of gestation, due to a powerful effort on the part of the mother, which was followed by bleeding from the genitalia for a couple of days. After the rupture the membrane rolled itself into strings in consequence of the fœtal movements. It encircled and became entangled with the fingers and toes at a time when they were exceedingly delicate structures, cut off their circulation and determined in time their amputation.

Pregnancy Complicated by an Ovarian Tumor.

At a meeting of the Berlin Obstetrical Society, January, 1890, P. Ruge reported the following case: In the third month of gestation a pregnant woman noticed a desire for frequent urination. In the following month there appeared marked œdema of the external genitals and the lower extremities without albumen in the urine.

On examination a fluctuating tumor as large as the fist was found in the posterior vaginal vault. This discovery was verified by the careful examination, conducted separately, of three experts. In the latter part of the fourth month the presence of the tumor excited uterine action. The tumor, under anæsthesia, was pushed up from its low position in Douglas's pouch so that it might not induce abortion ; but the cervix had already begun to dilate, and shortly afterward the uterine contents were expelled. In the following month the patient was examined again under anæsthesia, and the presence of the tumor demonstrated beyond all doubt. Upon the following day a laparotomy was undertaken for its removal, but, to the astonishment of the operator, no trace of it was to be found. It had undoubtedly ruptured in the twenty-four hours intervening between the last examination and the operation.

Labor Complicated by Syphilitic Disease of the Cervix.

From a study of labor complicated by syphilis of the cervix, Mesnard (*Archives de Tocologie et de Gynécologie*, Jan., 1891) comes to the following conclusions:

Syphilitic disease of the cervix can cause dystocia, as already proved by many cases reported from time to time. If the case, as is not improbable, should be followed by septicæmia there is scarcely any degree of local infection which intra-uterine disinfection, sufficiently prompt, energetic and frequent, cannot conquer. With one or two injections a day severe cases may die. It may be necessary to wash out the uterus four or five times in the twenty-four hours, or even oftener.

The Advantages of Substituting External for Internal Examinations in Obstetrics.

To demonstrate the advantages of omitting intra-vaginal manipulation before and during labor, such as injections, rubbing with antiseptic solutions and repeated digital examinations, Leopold and Pantzer (*Archiv f. Gynäkologie*, Bd. 83, Heft 2, 1890) give the results of a series of confinements in which these were employed, and contrast the same with cases in which intra-vaginal manipulation was entirely discarded. In 1,136 cases the vagina was washed out by gentle rubbings with 1–4000 sublimate solution. In 80 per cent. of the cases there was no rise of temperature above 100½°. Previously, in 1887, when only vaginal injections were given, in $82\frac{8}{10}$ per cent., the temperature had been below 100½°. The slight gain by the former plan is counterbalanced by the fact that the removal of the natural vaginal secretion predisposes to more frequent and extensive rectal and vaginal lacerations. Moderate hemorrhages are also more frequent, and they believe that the danger of infection is increased when, as is so frequently the case, the hands are not absolutely aseptic.

In other series of deliveries, with strict subjective and objective antisepsis, including careful washing of the external genitalia, abdomen, anus and fold of the buttocks, no intra-vaginal manipulations were made in normal cases. In 1,123 confinements, 90.29 per cent. did not have a temperature above 100½°. In 300 cases 94 per cent. had no rise beyond 100½°. It was also noted that in these cases lacerations and hemorrhage occurred less frequently.

They conclude that in hospitals where students or midwives receive instruction, as well as in private practice, intra-vaginal manipulation should be avoided, and external examination by abdominal palpation resorted to in at least normal cases. They believe that the diagnosis of the position and presentation of the child and the progress of labor are just as surely determined by an external as an internal examination. By abdominal palpation one can readily ascertain delay of the head at the pelvic inlet, a dilated lower uterine segment, a prolapsed arm and even the location of the placenta. During a normal labor, as the head gradually passes into the pelvic cavity it becomes less distinct to the fingers, exercising super-pubic pressure, and its advance from time to time is thus noted. Thousands of such cases occur both in hospital and private practice, and they believe that the puerperium will be much less complicated by omitting internal examinations. This omission is of especial value during epidemics of contagious diseases.

Meningeal Hemorrhages in the New-born Infant.

In a medico-legal study of meningeal hemorrhages in new-born infants, Richardière (*La Médecine Moderne*, Oct. 23, 1890) reports three carefully studied cases. He believes, with Cruveilhier, that about one-third of the infants still-born, or born in a state of apparent death and dying shortly after, die of meningeal hemorrhages.

Studying the anatomical lesions he found the extravasated blood occupying a variable situation. In one it was subdural and the pia mater evenly infiltrated. In another there were three layers without apparent communication—*i. e.*, between the calvarium and dura, subdural and subarachnoid. In the third case it was exclusively subarachnoid. The hemorrhage, therefore, differs from meningeal hemorrhage in the adult, which is very rarely subarachnoid. The blood was liquid, about an ounce in quantity, and covered both hemispheres, gravitating toward the sides and occipital fossa. The meshes of the pia mater were infiltrated with coagulated blood, which involved the whole extent of the membrane, following particularly the vascular sheaths. The arachnoid was normal, presenting neither false membrane nor the opaline plaques of Parrot, which this observer found in new-born infants, attributed to a fatty degeneration of the connective tissue and considered a cause of meningeal hemorrhages. The calibre of the vessels of the pia mater appeared normal. There was no localized rupture nor ulceration. The extravasation seemed to be a general capillary oozing.

Contrary to some observers, he did not find the skull more vascular than normal, or the veins of the dura and sinuses engorged; the brain also was pale and not hyperæmic.

In two of his cases subpleural ecchymoses were observed. Cruveilhier has noted similar lesions upon the lungs and thymus. Their presence should therefore not be considered presumptive evidence of death by suffocation.

Clinically these cases present themselves in two classes. In one the asphyxiated infant cannot be resuscitated, gives no sign of life, dies without convulsion, and before any functional activity manifests itself. In the other, respiration is established, but after a few days vomiting, convulsions and dyspnœa supervene, followed by coma and death. Exceptionally the infant may live some weeks, or even recover, but in such cases the hemorrhage is probably subcranial—*i. e.*, an internal cephalo-hematoma, which is spontaneously curable and for which surgical intervention is justifiable.

Richardière considers these hemorrhages traumatic in origin, as in subarachnoid hemorrhage in adults, but believes them different in this respect—the cranial bones are intact, and there is no sign of contusion of the brain. The traumatism results from a long labor, as when there is a disproportion between the size of the head and pelvis; they occur more frequently in primiparæ. The lesion is produced when the head is passing the inlet, the intra-cranial effusion occurring at about the same time as a caput succedaneum. From a medico-legal standpoint he considers these hemorrhages traumatic and accidental and in no way the result of criminal intervention.

Mechanism of Incomplete Foot-Presentations.

Nagel (*Archiv f. Gynäkologie*, Vol. 39, No. 3) reports a series of eighteen cases, collected from the Poliklinik of the Charité, at Berlin, illustrative of the mechanism of incomplete footling presentations where the extended member presents posteriorly. In the article preceding the report of cases the writer maintains the propriety of turning in transverse positions where the back is posterior by means of traction on the foot farthest from the presenting arm.

He holds that the selection of this foot is non-essential, and in some cases the attempt to seize it difficult, yet it is important, in cases where it is necessary to extract rapidly, to make persistent efforts to seize the upper foot. In this he follows the teaching of Barnes and Gusserow, as opposed to that of Scharlau, Galabin and Winckel. The last maintains that the rotation of the child on its long axis, by traction on the upper foot, is apt to lift the lower hip out of the pelvis and lodge it above the brim. This method, however, according to

Nagel, has the advantage of bringing the extended leg anteriorly, especially when the operator observes the precaution of making traction toward the symphysis. Should, however, owing to improper traction, or to traction upon the lower foot, the presenting foot be directed posteriorly, the natural mechanism tends to rotate it anteriorly. The writer offers no analysis of the factors concerned in this mechanism.

In the eighteen cases which he reports the lower foot had been brought down first, with the result of its presenting in every case posteriorly. He observed, without exception, that when the foot was directed posteriorly in one or the other of the oblique diameters and the opposite hip directed toward the other end of the same diameter, the child rotated with the back turning toward the promontory, so that the back finally occupied the opposite side of the pelvis from that on which it was originally. The presenting part had thus rotated anteriorly through 180°.

He concludes by urging, as a result of these observations, the advantage of applying traction on the foot when it presents posteriorly, in a direction corresponding to that indicated in the natural mechanism, namely, toward the side opposite to that on which the back is and toward the symphysis.

Technique of Porro's Operation in Rupture of the Uterus.

Mermann (*Archiv f. Gynäkologie*, Vol. 39, No. 3), after recounting the advantages of laparotomy as compared to the conservative treatment of Olshausen and Veit, proceeds to give his reasons for advocating the Porro operation.

First, the difficulty in many cases of reaching the rupture in order to introduce the sutures; second, the impossibility of stitching the rent when the latter extends into the parametrium; third, the necessity, owing to the danger of hemorrhage after bringing the edges of the tear together, of providing, in the opinion of some operators, drainage either by drainage tube or by tamponing; fourth, the advantage of removing the uterus, which otherwise may act as the source of infection arising from the pressure and manipulations incident to the protracted labor; fifth, the protection against the danger of fresh lacerations in succeeding labors.

He cites a case illustrating the fatal result of tamponing, and the difficulty of removing the placenta from the abdominal cavity per vaginam. In contrast to this case he gives the particulars of one in which he removed the body of the uterus, without using any means of compression save that of ligating the ligaments and including the uterine wall in a row of interlocking sutures beneath the point of amputation. In this case it would have been impossible to bring the edges together in situ, inasmuch as the rent was posterior in the uterine segment, and on drawing the uterus forward the edges were too much separated to admit of suturing. The stump was left in the abdomen, having been covered with peritoneum after the introduction of sutures including the whole thickness of the stump. Drainage was not used. The abdominal stitches were removed on the fourteenth day.

The writer concludes by emphasizing the simplicity of the method employed in treating the stump, and the good results obtained without drainage.

Nephritis of Pregnancy.

Fehling (*Archiv f. Gynäkologie*, Vol. 39, No. 3) offers a further contribution to the clinical study of nephritis of pregnancy. He refers in the beginning of the article to his former observations on the relation between nephritis and changes in the placenta with death of the fœtus. He presents a series of cases with renal symptoms, sixty-six per cent. of which showed changes in the placenta; white infarcts. The placenta, contrary to that of syphilis, is small, unyielding and anæmic; the functional activity decreasing with the increase in the number of infarcts. The death of the fœtus, however, is less dependent on this fact than upon the changes in the decidua. This is marked by fatty degeneration of the glandular layer, which leads to separation and expulsion of the ovum.

Among the cases with albuminuria and death of the fœtus in repeated pregnancies he

designates two classes: one, in which the symptoms were due to changes in the kidney, resulting from anæmia of reflex origin; the other, in which an exacerbation of a chronic nephritis was due to a want of the compensation in the heart's action necessary to the increased demand upon the circulation, which led to venous congestion of the kidneys.

The treatment of mild cases of either class should consist in warm baths, milk and the avoidance of alcohol, for the purpose of decreasing the albumen, by establishing the proper circulation in the kidneys. In grave cases he considers the induction of abortion in the second or third month less detrimental to the mother than would be the continuation of pregnancy.

GYNECOLOGY.

UNDER THE CHARGE OF

WILLIAM GOODELL, M.D.,

ASSISTED BY

J. M. BALDY, M.D.

The Treatment of Uterine Tumors by Electricity: Its Effect on Small Tumors.

Keith (*British Med. Journal*, Feb. 14, 1891) states that the criticisms with which Apostoli's treatment has been so generally received, give him now, after two more years of experience, no concern. He knows some things that it cannot do; he knows better what it can do. Delicacy of manipulation, perseverance, and a knowledge of electricity are essential in carrying out this treatment with any hope of success or improvement to the physician, or comfort to the patient. The results are slow, but comparatively certain. The only quite hopeless cases seem to be fibro-cystic tumors and fibroids in which hydrorrhœa exists to a great degree. In these cases there is improvement up to a certain point, but it is not permanent. No fewer than one-half of the cases of fibroid seen during the last two years were advised to have no treatment whatever.

Keith regrets no part of his past work so much as that in which he removed so many ovaries for small bleeding tumors. During the last three years and a half he has not performed a single hysterectomy in soft or solid fibroids. He has operated three times for large fibro-cystic tumors, one of thirty-eight pounds, one of seventy pounds and another of seventy-six pounds. In two cases only has he removed ovaries for small bleeding tumors. In one case there was an ovary as large as a hen's egg; the other had two small ovarian tumors.

The electrical treatment is tedious, but may be shortened by using high intensities, with puncture. In only one instance has it been necessary to use an anæsthetic. Till quite recently Keith saw few cases of *small* tumors with symptoms so severe as to need treatment; lately many such presented themselves. The following were the seven earliest cases: (1) Small bleeding fibroid: profuse and painful menstruation; cured by electricity. (2) Small uterine fibroid: painful and profuse menstruation; disappearance of tumor under electrical treatment. (3) Fibroid uterus: almost continuous menstruation; electricity; disappearance of growth. (4) Small uterine fibroid: unusual amount of pain, with suspicion of ovarian and tubal disease, and disappearance of tumor under electricity. (5) Fibroid tumor in posterior wall of uterus: profuse menstruation; disappearance of tumor under electricity. (6) Small uterine fibroid, with profuse hemorrhages; enlargement of ovary; disappearance of tumor under electricity. (7) Long-continued bleeding fibroid: cured by electricity. Thus in five of these cases the fibroid entirely disappeared.

After the treatment is stopped, there may in some cases be no apparent benefit, and the good obtained may not be seen for several months. No explanation is given of the principle of the process which causes the absorption or diminution of the enlargements. In these cases it is certainly *not* that of electrolysis. It must be looked for rather in some form of

electrical osmosis. Several of the cases had enlargement of the ovary; not only did the fibroid disappear, but also the ovarian enlargement.

This treatment *almost always* relieves pain. It *almost always* brings about diminution of the tumor—sometimes rapidly. It *almost always* stops hemorrhages—sometimes rapidly. The results are *almost always* permanent, and the growth of the tumor, if it be not lessened, is stopped. The general health is immensely improved. By *almost always* he means nineteen cases out of every twenty.

Report of Sixty Cases of Uterine Myomata.

Kellogg's (*The Times and Register*, Feb. 7, 21 and 28, 1891) method of treatment has been essentially that of Apostoli—intra-uterine galvano-cauterization. In only one case was electro-puncture used, and that was followed by pelvic peritonitis. A current of from fifty to two hundred and fifty milliampières has been the strength used.

Of the sixty cases, four did not remain under treatment sufficiently long for a fair trial. Of the remaining fifty-six cases, fourteen were made worse, or not benefited. Fourteen were cured, the tumors disappearing. These tumors were small. Seventeen were relieved of their symptoms and the tumors reduced in size; eleven were relieved of the symptoms, but the tumors were not reduced in size. The appendages were removed in six of the cases, which were made worse, and in one who would not continue the electrical treatment.

The result in every case was rapid reduction of the tumor, and disappearance of all the symptoms in a few months. Neither the electrical nor surgical treatment is to be universally adopted; each has its own proper sphere. In no case will it do harm to try electricity first, and some degree of benefit will be obtained in at least 84 per cent. of all cases so treated. If no good is done, at least no harm will follow. Small tumors, irrespective of their situation, will be benefited. Interstitial growths, or those for the most part interstitial, are suitable for electricity. In women approaching the menopause, this treatment is especially applicable.

Kellogg is thoroughly satisfied that growths which are subperitoneal in character, or which are in greatest part subperitoneal, are much less amenable to the influence of the electrical current than those which are interstitial or submucous. This class should be treated surgically. Large, rapidly-growing tumors, especially in younger women, are more suitable for surgical treatment. Cases in which the appendages are diseased, should also be included in this category.

It is a question whether patients who cannot remain under treatment long enough for successful results should not be dealt with surgically. It must be considered also that the application of electrolysis is itself not wholly free from risk. Several deaths are known to have been produced by this method. Great mischief has already arisen and will very likely continue to arise as the result of the propagation of the idea that electrolysis is a perfectly safe method.

Abdominal Drainage after Laparotomy.

Sänger (*Deutsche med. Wochenschrift*, Jan. 22, 1891) refers to the practice of most German operators in completely closing the abdomen even after unclean laparotomy. Comparing results with those of English and American operators, he concludes that drainage not only greatly diminishes the critical status, but also induces healing.

Abdominal drainage dates from Kœberlé in 1867, and is practically of three kinds: that by glass tubes, curved or straight, by gauze tamponades, or by both glass tubes and aseptic absorbent gauze combined. Of these three the last is by far the best. When the gauze alone is used it becomes saturated, and in its removal the fluid is squeezed back into the abdominal cavity. After closure and the introduction of the glass drainage tube the sides of the abdomen should be pressed together and the gauze wick introduced by means of a copper sound. Over this is placed a gauze and wood wool dressing, secured by means of broad adhesive strips. The fluid should not be drawn off by means of a syringe, but the gauze should be allowed to do this work until all secretion has ceased.

The clinical indications for drainage are as follows: Frequently in cases of salpingo-öophorectomy, particularly in pyosalpinx; in abscess of the ovaries; in exudative peritonitis with pus; in intra-peritoneal hæmatocele; in chronic peritonitis; in wounds of bladder and bowel; in cases where the stump of the uterus has been dropped in the pelvic cavity; in cases of ectopic gestation; in enucleation of intra-ligamentous and retro-peritoneal tumors, especially those of the kidneys, etc.

Exploratory and Confirmatory Incisions.

Lawson Tait (*Lancet*, Feb. 7, 1891) discusses the difference between exploratory and confirmatory incisions into the abdomen, and points out their respective values.

An exploratory incision is one in which, having made every effort to make an exact diagnosis, it is impossible to decide between two conditions, as, for instance, between a fairly solid ovarian tumor and a soft, œdematous myoma. Under such conditions the operator must be prepared to do either an ovariotomy or a hysterectomy. It is, of course, evident that increased experience diminishes the number of these explorations. Tait does not make one now for eight or ten that he made some years ago.

Confirmatory incisions, on the other hand, become more common with him. In all cases, when a conviction is forced upon him that the disease is malignant, he tells the patient so, but at the same time says that all such opinions are liable to error, and that a confirmatory incision is necessary to absolutely establish the diagnosis, since occasionally a case which seems to be certainly cancerous is not so. A corrective incision only can reveal the real nature of the affection. Such mistakes have occurred so frequently in his practice as to completely justify the practice of confirmatory incisions.

The Effects of Pregnancy and Parturition upon the Operation of Shortening the Round Ligaments of the Uterus.

From the experience of Alexander (*British Med. Journal*, Feb. 14, 1891), the following propositions are true: (1) That the occurrence of pregnancy is favored in case of retro-displacements by the operation of shortening the round ligaments, and that when pregnancy occurs it proceeds and terminates naturally; (2) that in backward displacements the malposition does not tend to recur after parturition. The proof of these two propositions rests upon theoretical considerations and on actual results of operation.

Theoretically, in pregnancy, the shortened round ligaments are not much strained, because the distance from the internal ring to the site of their attachment to the uterus is probably not greater in the pregnant than in the unimpregnated uterus. Any strain during pregnancy upon the shortened ligaments does not so much produce stretching of these ligaments as development of the uterine cavity in a direction that does not increase the strain, and consequently the attachment of the ligaments apparently to a part of the body of the uterus much nearer the cervix than usually occurs. Further, any stretching of the ligaments that may occur is probably rectified by *post-partum* shortening, both uterus and ligaments reassuming, if involution has been natural and complete, as nearly as possible the condition that existed before pregnancy took place.

The practical proof is offered in seven reported cases on whom this operation has been performed. They were all cases of retro-displacement, and all became pregnant and went to term. Subsequently the uterus was found in good position in each case.

Kraurosis Vulvæ.

To the twenty-six cases already reported, Orthmann (*Centralblatt f. Gynäkologie*, Jan. 24, 1891, *Zeitschrift f. Geburt. und Gyn.*) now adds five new ones from Martin's clinic in Berlin. The atrophic stage, which shows itself as a vestibular stenosis, dryness, smoothness and scar-like condition extending to the smaller labia, follows, as is shown by Orthmann microscopically, a hyperplastic stage; the rete Malpighi appears narrow in some places, broad in others; the corium here straight, sclerosed and scar-like, there infiltrated with cells.

Bacteriological investigations show nothing of value. Intolerable itching and pain are given as the most noticeable symptoms. The treatment consists in excision of the diseased area and closure of the resulting wound by a row of sutures. No relapses have yet been observed.

Vascular Tumors of the Female Urethra.

Pozzi (*Centralblatt f. Gynäkologie*, Jan. 24, 1891, *Mercredi Méd.*, 1890) gives Jandeau as an authority to the effect that these vascular tumors are composed of a matrix of intertwined elastic fibres, between the meshes of which venous plexuses and lacunæ are situated. Near the periphery of these tumors the vessels are obliterated and terminate in thin fibrous filaments. The mucous membrane covering them shows many layers of pavement epithelium and hypertrophied papillæ. They may surround the meatus urinarius, or, as is more common, they may grow as pedunculated polyps along the course of the urethra. They exist in women of all ages, preferably those of middle life. Local inflammation causes them to increase their growth. The irritation of urination and coition often produces vaginismus. They are successfully treated with either the scissors or the thermo-cautery.

Anatomical and Clinical Changes in the Vaginal Mucous Membrane.

Neumann (*Centralblatt f. Gynäkologie*, Jan. 24, 1891, and *Deutsche med. Woch.*) recognizes (1) acute diffused vaginitis; (2) chronic diffused vaginitis; (3) acute papular vaginitis; (4) chronic papular vaginitis; (5) aphthous vaginitis; (6) vesicular vaginitis; (7) atrophic vaginitis. He does not believe that the nodules of papular vaginitis arise from the follicles of the vaginal mucous membrane. His experience has been that this form of kolpitis is frequent, while the existence of the vaginal follicles is unfrequent; therefore there must be some other explanation of its origin.

Under the atrophic form of the disease, Neumann includes two varieties—namely, those which follow frequent pregnancies, and those in old women following long years of continual cohabitation. The first is characterized by a flattening of the papillary bodies, a thickening of the epithelium with an increase of the pavement cells, and a decrease of rete, on account of an accumulation of round cells about the vessels of the shrunken papillary bodies. The senile variety, in addition to these changes, shows a shrinkage of the cutis and the muscles, as well as an atrophy of the vessels.

The aphthous vaginitis is of the same character as the like affection of the mucous membrane of the mouth.

A New Mode of Extirpation of the Uterus.

J. H. Wythe's (*Pacific Med. Jour.*, Feb., 1891) method is applicable only to early cases of uterine cancer. The object is to avoid disturbing the uterine and ovarian plexuses of bloodvessels. The inner muscular layer of the uterus and the walls of the cervix are traversed by mucous follicles, opening into the uterine canal. As uterine epithelioma originates in the cells of these follicles, the inner muscular layer should be thoroughly removed, together with the adjoining layer, so as to leave but a small amount of muscular tissue next to the peritoneum. The vessels being in the peritoneal covering are avoided, as is also the circular artery of the cervix.

Two successful operations have been performed after this method. The cervix is grasped with vulsellum forceps and brought down to the vulva. With blunt-pointed scissors, curved on the flat, the operator cuts around the forceps (well above the disease) on the cervix, making traction at the same time until the cervix and uterine body are deeply incised. The whole mass is then enucleated up to the fundus of the uterus.

THE SACRAL METHOD OF TOTAL EXTIRPATION OF THE CARCINOMATOUS UTERUS.

MÜLLER (*Correspondenz-Blatt f. Schweizer Aertze*, Jan. 15, 1891) considers vaginal extirpation of the cancerous uterus unsatisfactory. In many cases it is impossible to draw the cervix to the vulva on account of the tenseness of the broad ligament. The cervix is often so friable that it breaks away under traction. The field of operation is a very limited one.

These difficulties are all overcome in the sacral operation. This is performed by making a vertical incision over the sacrum down to the bone, stopping short of the anus. The coccyx and lower part of the sacrum are dissected free from muscles and ligaments. The coccyx and an inch of the sacrum are removed by means of the bone-forceps or chisel. The rectum which, at this stage, presents in the wound, is pushed to one side, and the vagina is opened on its posterior aspect. The uterus is then removed as in vaginal extirpation, the peritoneal and vaginal wounds are closed with sutures; the vagina and deep wound above the anus are packed with iodoform gauze, and the wound is allowed to heal by granulation.

The opponents of this operation hold that the preparatory operation for reaching the uterus is a great disadvantage. It necessitates a long incision through the skin and muscles, as well as the removal of the coccyx and part of the sacrum; the rectum must be kept out of the way, and the vagina must be opened. The procedure is a bloody one and takes about twenty minutes for its completion. The wound must heal by granulation, thus taking about six weeks' time.

Müller lessens these disadvantages by making a shorter incision, by not resecting any part of the sacrum, and by closing the wound with sutures, at the same time providing for drainage at the upper part of the vagina through the wound.

The advantages of the operation are that one can, with greater ease and certainty, dissect out the cancerous tissues; where the disease has invaded the bladder, vaginal walls and broad ligaments it can be more safely dealt with; the peritoneal and vaginal incisions can be more easily closed. In consequence of all this, patients can be cured, who formerly certainly would have perished. Vaginal extirpation is reserved for cases in which the disease has not proceeded beyond the cervix. Three successful cases are reported.

MISCELLANEOUS.

ASSOCIATION OF AMERICAN PHYSICIANS OF BERLIN.

ABOUT forty American and Canadian physicians held a meeting on February 19, 1891, at Berlin, in order to found a permanent organization such as exists in Paris, London, Edinburgh and Vienna.

Prof. Miller (U. of Pa.), now Professor at the University of Berlin, called especial attention to the fact that such an organization would not only greatly benefit the physicians who remain here for purposes of study, but also that it would call the attention of Germany to the forward tendency of American medical science. He strongly urged the publication of the transactions of the association every year.

Permanent organization was effected, Dr. Judson Daland, of Philadelphia, being elected president, and Dr. F. Weber, of Milwaukee, secretary. Prof.

Miller, Dr. Amos, of Iowa, Dr. H. Douglas, of New York, and the president and secretary, were elected as a Committee on Constitution. As a Committee on Information to New-Comers and on Organization of Special Private Courses, Dr. H. T. Brooks, of New York City; Dr. Louis Frank, Louisville; Dr. Crystal, Baltimore; Dr. Neal Mitchell, Florida; Dr. Marple, New York; and Dr. Kennedy, Montreal, were appointed.

The objects and scope of the society, as set forth in the preamble, are:

First, the arrangement of medical work and the formation of special private courses, so that any desired instruction may henceforth be obtainable at this University.

Second, the giving of advice to new-comers regarding instruction, lodgings, books, instruments, etc., etc.

Third, the reading and discussion of papers of general interest, exhibition of patients and demonstration of specimens in all lines of work taken up by members.

Fourth, the furthering of mutual ends by a more extended acquaintance of the physicians here.

The society, at its first session, listened to an interesting demonstration of specimens of myocarditis segmentaire and of a blood cyst of the aortic valve by Dr. Henry Douglas, New York City. Dr. Weber then demonstrated specimens of blood from leukæmia and pernicious anæmia, and talked of the value of Ehrlich's methods of blood-staining. Dr. Daland discussed malaria and relapsing fever of Russia, and demonstrated the pathological micro-organisms of these diseases. An interesting discussion of these papers followed, thus alone making the benefit of the association apparent to all.

Drs. Fitzgibbon and Mead, of Wisconsin, and Navy-Surgeon Kenyoun were present as visitors. Prof. Miller then kindly offered the use of the Dental Lecturing Room of the University, Dorotheen Str. 40, as a permanent meeting-room of the society.

New-comers and others desiring information will please apply to the Secretary, Dr. Fred. R. Weber, Charité, Berlin.

Berlin, February 28, 1891.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.

THE American Electro-Therapeutic Association was organized on the 22d of January, 1891, at the Academy of Medicine, New York, by the adoption of a Constitution and By-Laws, and the election of the following officers: President, G. Betton Massey, M.D., Philadelphia; Vice-Presidents, William James Morton, M.D., and Augustin H. Goelet, M.D., New York; Secretary, William H. Walling, M.D., Philadelphia; Treasurer, Geo. H. Rohé, M.D., Baltimore; Executive Council, Horatio R. Bigelow, M.D., Philadelphia; Franklin H. Martin, M.D., Chicago, Ill.; Wm. F. Hutchinson, M.D., Providence, R. I.; Frederic Peterson, M.D., New York; and Chauncey D. Palmer, M.D., Cincinnati, Ohio.

The object of the Association is "The cultivation and promotion of knowledge in whatever relates to the application of electricity in medicine and surgery."

The Association starts with a strong and vigorous membership, and has every prospect of a most useful and successful career. The next meeting will be held in Philadelphia, in September of this year.

ASSOCIATION OF AMERICAN ANATOMISTS.

The next meeting of the association will be held at Washington, D. C., at or about the time of meeting of the Congress of American Physicians and Surgeons in September, 1891. The officers for that meeting are as follows: President, Joseph Leidy; Vice-Presidents, Frank Baker and F. D. Weisse; Secretary and Treasurer, D. S. Lamb; Executive Committee, Harrison Allen, Thomas Dwight and B. G. Wilder.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

The Mississippi Valley Medical Association will hold its seventeenth annual session at St. Louis, on Wednesday, Thursday and Friday, October 14, 15 and 16, 1891. A large attendance, a valuable programme and a profitable time are expected. The members of the medical profession are respectfully invited to attend.

THE NEW SURGICAL WARD FOR DEFORMED CHILDREN.

The Surgical Ward for Deformed Children in the University Hospital, in which a number of ladies both from this city and from the adjoining towns in Pennsylvania and New Jersey have been greatly interested, was opened January 19, and within a week the entire twelve beds were filled with children in need of its curative and helpful work. Through the efforts of these friends it has been neatly and attractively furnished without expense to the Hospital, and the faces of the children indicate their satisfaction with their surroundings.

It is expected that this temporary ward will become the foundation of a larger enterprise, which will include the endowment and erection of a building with departments for children of all classes, medical, surgical and orthopedic, and with appliances for special treatment. The necessity for the separation of this class of patients from adults needs no argument.

The twelve beds in the ward are already endowed, and as soon as the full endowment is received there is no question but that other contributions will speedily supply the building that will greatly enlarge the possibilities of the work here begun by Dr. Willard in making helpless and suffering children better able to support themselves and others.

THE JOURNAL OF GYNECOLOGY.

It is announced that early in April the first number of the *Journal of Gynecology* will be issued. This monthly journal, under the editorship of Dr. Charles N. Smith, will be devoted to gynecology, obstetrics and abdominal surgery, and will contain forty-eight pages of reading matter, consisting of original articles, society transactions, selections and abstracts, and a bibliographical index.

STATE SANITARY CONVENTION OF PENNSYLVANIA.

The Fifth State Sanitary Convention of Pennsylvania will be held at Altoona, Friday and Saturday, May 15 and 16, 1891, under the auspices of the State Board of Health, assisted by the Board of Health of Altoona and a committee of citizens. All who take an intelligent interest in the promotion of sanitary reform and the protection of the public health are invited not only to be present and take part in the discussions, but to forward to the secretary, Dr. Benjamin Lee, 1532 Pine St., Philadelphia, for consideration by the Committee of the Board, not later than April 15, papers on sanitary or hygienic subjects which they would like to present before the convention.

PERSONAL.

Dr. Benjamin Lee, who will be secretary of the section on State Medicine in the coming meeting of the American Medical Association, requests the titles of all papers intended for this section to be in his hands before April 5.

Dr. C. Sayre, of Moncton, N. B., sends a notice of the death of Dr. James R. Fitch, formerly of St. John, N. B., a graduate of the University of Pennsylvania of nearly sixty years ago, his diploma having been granted in 1831. Dr. Fitch was well and widely known in the region in which so long he lived and practised his profession.

Dr. H. Augustus Wilson, Professor of General and Orthopedic Surgery in the Philadelphia Polyclinic and College for Graduates in Medicine, has been elected Lecturer on Orthopedics in the Jefferson Medical College and Surgeon in charge of the Orthopedic Department of the Jefferson Medical College Hospital, in the place of Dr. O. H. Allis, resigned.

CORRESPONDENCE.

THE PRESENT POSITION OF ANTISEPTIC SURGERY.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE:

GENTLEMEN: I enclose a copy of the letters which have recently been sent by Mr. Tait and myself to the *British Medical Journal* in reference to the subject of "The Present Position of Antiseptic Surgery." I would call attention to the fact that in the same journal for February 21, Mr. John D. Malcolm notes the want of agreement between some of Mr. Tait's statements as to the behavior of sponges left in the peritoneal cavity and the clinical facts.

He adds, "This is not remarkable when we consider that he avowedly laughs at the knowledge acquired from scientific experiment, and prefers to found his opinions upon the evidence of certain household customs, on which he has put an interpretation, the accuracy of which is not above suspicion."

I am, etc.,

March 18, 1891. J. WILLIAM WHITE.

SIR: Professor White replies to my criticism of Sir Joseph Lister's Berlin address, a task which I think I may venture to say had better have been left to Sir Joseph himself.

Fortunately for my present purpose, Professor White puts the issue syllogistically, and formulates for both of us a major premiss, upon the truth or error of which depends the whole conclusion; and I accept this issue freely. I say that germs of decomposition exist already in the blood and elsewhere in the body and are ever present, but do not bring about their results till death, or some condition which we may call a tendency to death, gives them permission so to do. Professor White says that the elaborate and carefully-conducted experiments of Hauser, Watson Cheyne and others completely contradict the statement "which is really the foundation of Mr. Tait's argument."

In reply, I say I care not a straw for elaborate and carefully-conducted experiments, no matter at whose hands, when their conclusions are diametrically opposed to every-day experience. There must be an error in the experiment or in the minds of the experimenters—more probably in the latter. John Hughes Bennett and Arthur Gamgee, with others in the case, must be admitted to be skilled experimenters. By hundreds of experiments they showed that mercury has no action on the liver and secretion of bile, and that the absence of bile from the intestinal circulation of the animals experimented on killed them by slow starvation. But my daily experience and the daily experience of all humble unscientific practitioners like myself shows absolutely that mercury has a very potent influence on the liver and on the secretion of bile. My clinical experience shows, and it is published to the effect, that patients gain weight and improve in health whilst every particle of bile formed by them is pouring out of a fistula in their gall-bladders. Mayo Robson and others have confirmed this; therefore, we laugh at Bennett and his scientific experiments.

In the present case how are we to explain, on the germ theory, the occurrence of abscesses in closed cavities, such as joints or the pleura, or in muscular tissue—or, indeed, anywhere save in open wounds—unless the germ theory is a delusion, or unless germs are omnipresent, and are at times, and for reasons not understood, permitted to wreak their wicked wills? It is perfectly impossible to argue with people who cannot see such a self-evident proposition as this.

But the facts of decomposition—save their immediate microscopic causes—have been

known for centuries, and it has been only our want of reasoning power which has prevented us applying the every-day facts of the housekeeper's room to the processes of disease. Let me quote a familiar example. A solid mass of beef—say, a bed and silverside—is removed from a perfectly healthy ox, and is put at once into a sound and healthy pickle. The pickle is a powerful antiseptic, and if the pickle reaches the middle of that beef before the germs contained in it have had time to start their work, the beef, in a few days or a week or two, will be fit to eat. But every housekeeper knows perfectly well that the result will depend absolutely upon the outside temperature. It would be absolutely impossible to pickle a piece of beef in August, which could be easily pickled at Christmas. Does Professor White imagine that during the few hours—it may be few minutes—that the beef is exposed to the air it becomes impregnated with germs right to the centre, or is it not more consistent with common sense to believe that the germs were in it before it left the ox, and, therefore, in life? In truth, the facts of the housekeeper and the henwife are far more scientific, that is, far more exact, than those of our biological experimenters. They are in harmony with what I see in my work every day, and, therefore, it seems to me a perfect waste of time to follow Professor White beyond his own major premiss, which is utterly mistaken.

I am, etc.,

Birmingham. LAWSON TAIT.

SIR: As Sir Joseph Lister has usually ignored Mr. Tait's attacks, and as there seemed no reason why he should make the last one an exception, I ventured to reply to it, being impelled thereto not by any sense of peculiar fitness for the task, but by profound respect and warm personal regard for the author and exponent of the antiseptic theory, and by an abiding faith in the truth of that great surgical principle. A specific and utterly groundless charge contained in Mr. Tait's article as to the "deadly and dangerous" character of the double cyanide dressing, with which I have had a fairly large experience, and the use of which I have been teaching to hundreds of young men at the University of Pennsylvania, supplied a further motive for the reply which, but for these reasons, might well, as Mr. Tait intimates, have been left to abler hands, if not to those of Lister himself.

In the communication in which Mr. Tait answers my paper there is, however, no evidence that he has anything to say which is worthy of Sir Joseph's attention. If his statements were as accurate as they are vigorous, or if the soundness and extent of his information were commensurate with the positiveness of his assertions, he would be a formidable controversial opponent; but the fact that he prefers the arguments as well as the literary style of the "housekeeper and the henwife" to those of biological experimenters materially lessens the value of his utterances. In the discussion of a scientific question of so much practical importance I personally prefer to be guided by more accurate observations than those made by the average butcher or housewife in putting a piece of even a "perfectly healthy" ox into an equally "sound and healthy pickle!!"

My assertion was that "the fluids and tissues of the *healthy* living body are *practically* sterile."[1] Mr. Tait says in contradiction "the germs of decomposition exist already in the blood and elsewhere in the body and are ever present."

In support of my position, I may cite, in addition to the experiments of Hauser and Cheyne already mentioned, those of Pasteur, Meissner, Koch, Zahn, Fodor, Chiene, Ewarts, Rosenbach, Crookshank, and others, all of which are familiar to bacteriologists, but are useless in an attempt to instruct Mr. Tait on account of his partiality for what he calls "the every-day facts of the housekeeper's room." If he will consent to accept the every-day facts of the surgical ward instead, and will recall the almost invariable absence of putrefactive changes in simple fractures; in uncomplicated synovial effusions; in ovarian cysts; in contusions without solution of continuity; in pleural effusions, etc., he will realize that the germs of decomposition can scarcely be omnipresent, as he claims, as it would be "diametrically opposed to every-day experience," if their unvarying presence did not oftener give rise to the form of fermentation that we know as putrefaction.

[1] Address before the University of Toronto, December 19, 1890. Annals of Surgery, January, 1891.

Possibly, when Mr. Tait refers to the occurrence of abscess, etc., in closed cavities, in support of his position, he allows the difference between the germs of putrefaction and the microbes of suppuration temporarily to escape his memory, or, possibly, he purposely ignores this differentiation of such insignificant objects, as it rests upon the evidence of gentlemen who waste their time in looking through microscopes and in comparing their observations and testing their results by biological experiment. If Mr. Tait had ever opened a true tuberculous psoas abscess or empyema without antiseptic precautions, he would have had an admirable "practical" opportunity of observing the effect of admitting germs, either of decomposition or of suppuration or both, to a fluid already containing the germs of tuberculosis, and would, perhaps, have avoided the appearance of ignorance as to some of the elementary facts of bacteriology.

There can be no doubt that pathogenic microbes do, now and then, gain access to the tissues of a healthy organism, but they are immediately and almost invariably eliminated by the excretory organs or destroyed by the action of the cells and fluids of the body. The interesting fact (I think, on the testimony of Rosenbach, Kocher, Becker, Krause, Ribbert, Steinthal and Krönlein, I may venture to call it a fact, though it is *not* an everyday one) that osteo-myelitis occurs in a simple fracture after micrococci have been injected into the circulation, although previously the "omnipresent" germs have exerted no influence, would seem to emphasize the difference between the occasional and accidental admission of pathogenic microbes into a healthy body (which is not denied), and the effect of an increased dose of such microbes upon an organism in which there has been established a *locus minoris resistentiæ*.

Possibly in the few cases of empyema, joint-abscess, etc., which are not tuberculous (and therefore dependent upon a specific organism, which I suppose not even Mr. Tait would claim to be ever present), some such infection does occur, but at present demonstrative proof of the exact channel of contamination is wanting. It is, however, equally beyond doubt that in many of them an infection atrium exists, communicating with the cavity through the interstices of the tissues, or through the lymphatics. At any rate, it is a matter of common experience that such abscesses are exceedingly rare in non-tuberculous patients. Their occurrence, therefore, offers not the slightest justification for the sweeping assertion of Mr. Tait, who insists that we must either reject the germ theory of suppuration altogether or admit the "omnipresence" of the germs.

As to the "beef and pickle" argument Mr. Tait surely did not realize that he was offering a "biological experiment" in evidence. If he did so deliberately, I would ask him to let me have the exact antiseptic value of the "powerful" pickle in its influence on both bacteria and spores; the methods used for disinfecting the cleaver and sterilizing the hands of the experimenter; the precautions taken in transferring the "bed and silverside" (whatever that may be) from the ox to the pickle, and such other information as may enable me to defend my major premiss properly, or to renounce it if the "facts of the henwife and housekeeper" are really facts and are overwhelmingly against me.

The progressively improving results obtained by such experimenters as Meissner and Rosenbach in the preservation of portions of healthy animal tissue, by placing them with great quickness and scrupulous cleanliness in previously sterilized flasks, show the usual absence of germs in the healthy body, and serve at the same time to explain the failures of some earlier observers. As they acquired dexterity they became able to preserve in this way, without the use of any antiseptic solution, nearly every specimen.

In the face of such evidence as this, confirmed by other investigators, and reinforced by bacteriological study of the blood and tissues, statements as to the omnipresence of the germs and the consequent inutility of antiseptic treatment based on such insufficient grounds as those Mr. Tait advances are puerile. They would be laughable if the question involved was not one affecting human life. I am, etc.,

Philadelphia. J. William White.

THE CORONER'S LAW.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE :

DEAR SIRS :—The coroners of Philadelphia for a long time have interpreted the laws in regard to the right of signing death certificates in a manner which, to me, seems not in accordance with the statute upon which they have based their action. The matter affects every one, for the questions involved touch the rights of every inhabitant of the city. Yet the subject is one which comes first to the attention of physicians, and one in which they are in a manner the guardians of the rights of the public, because in most instances they are obliged to decide if a certificate of death shall be given. Now, as in all cases of death occurring within our city limits, a certificate must be given by a physician, or an inquest held by the coroner, it becomes incumbent upon physicians to know enough of the law to be able to judge when to give and when to withhold such certificates. This being the case, and the law being, in my opinion, in many instances badly administered, I believe that if the matter can be given publicity, as, for instance, through the columns of your journal, much benefit will accrue to the public.

It must be understood that I speak only as a physician, without having had any legal advice, and may possibly, therefore, be led into technical errors, though it will be found, I am sure, that in regard to the broad general facts I am right.

The law which governs the matter, or which at any rate is commonly appealed to by both the coroner and physicians as a guide, is an Act of Assembly of March 22, 1867, and reads as follows: "It shall be the duty of the coroner of the city and county of Philadelphia to hold an inquest on the body of any deceased person who shall have died a violent death, or whose death shall be sudden ; *provided*, that such sudden death be after an illness of less than twenty-four hours, and that no regular practising physician shall have been in attendance within said time, or that suspicious circumstances shall render the same necessary, which said suspicions shall first be sworn to by one or more citizens of said city."

The common practice in the city at the present time is that the coroner is notified in all cases in which death takes place after an illness of less than twenty-four hours' duration, and the law which I have quoted is appealed to as a warranty for the inquest. In more than one instance in the course of the last few years, physicians have been summoned before the coroner and reprimanded for having given a certificate of death when they had been in attendance for a period of less than twenty-four hours. Again, in all cases of death from sunstroke the coroner claims the right to hold an inquest, and physicians are forbidden to give a certificate. The coroner claims jurisdiction, too, in all cases when persons die as the result of accidents, railroad injuries, etc., even if they live for months afterward.

Some years since, I attended an old woman for a few weeks, and then finding her apparently better, I told her it was not necessary for me to visit her any more at that time. About a week later I was summoned to the house to find

her dead. Now, according to the interpretation of the law, which is commonly attributed to the coroner, I had no right to give a certificate of death. The husband of the dead woman was a blind man of over 80 years of age, and was in bitter distress. Did the law command that I should, in such a case, though the death was beyond doubt due to disease of the heart, refuse a certificate and put the poor old man to the anguish of having what to him would have seemed a desecration of his wife's body committed—a coroner's jury brought into his house to discuss his private affairs, and an unnecessary *post-mortem* examination made despite his wishes to the contrary? I had considered the law bearing on the case, and thought that such was not its intent, and accordingly gave the certificate.

Briefly, I will try to set forth what the statute does direct. It is divided distinctly into two parts—it commands in the first place that an inquest shall be held in cases of violent death; and in the second, in cases of sudden death if certain things be so. These things are two and only two—if the illness was of less than twenty-four hours' duration and no physician had attended the patient, or if there were suspicious circumstances, which must have been sworn to by one or more citizens. It shows a gross lack of comprehension of the English language to interpret this law to mean that an inquest shall be held in all cases of death after an illness of less than twenty-four hours' duration. Under this law it seems plain that no inquest should be held in cases of death from sunstroke, for the death is neither violent, nor, if sudden, does either of the contingencies that come after the word "provided" apply. So far, then, the law seems plain, for the question is of the interpretation of what is mandatory in it. It is not so easy, however, to understand what is legal and right in cases of death long after violent injuries. The law distinctly commands that an inquest be held if any person "shall have died a violent death;" but if a man receives an injury in an industrial establishment or in a railroad accident, and then, after lingering for weeks or months, dies, is such a death violent within the meaning of the law? The coroners of the city of Philadelphia have said yes.

To me it has seemed, for a long time, that these points should be submitted for decision to a legal tribunal, and that the fittest way to reach such a decision would be for some hospital to give the coroner notice that it considered his interpretation of the law incorrect, and that it intended to bring the question before the courts by having its physicians give certificates in such cases, thus forcing the coroner to accept the view of the law that has been set forth, or to arrest the physician who signed the certificate, and have the issue tried in court. If by giving publicity to my letter the abuses to which I have directed attention can be corrected, or even an attempt made to correct them, I shall believe that both your journal and myself are to be congratulated upon having accomplished a good deed. I have the honor, gentlemen, to be

Yours very respectfully,

ARTHUR V. MEIGS.

Philadelphia, 1322 Walnut St., March 3, 1891.

AMETROPIC CHOROIDO-RETINITIS.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE:

The letter of your correspondent with the above title appearing in your last issue reminds me of the spirit illustrated by the old tale of the borrowed kettle — "It was sound and whole when I returned it to you; the crack in it was there when I borrowed it; I never had your old kettle."

From the studied silence with which my paper had been received by some "authorities," I had feared that perhaps my facts were to be disputed. I was, therefore, much gratified to find your correspondent referring to them as "points of importance," and that they were thoroughly well known—indeed, long ago, the toy of the University infant during his first dentition. But my gratification was rudely dispelled by the subsequent assurance that my explanation of the facts was absurd. Your correspondent should have quoted the antique adage so often applied to us theory-concocters: "What is true in the theory is not new, and what is new in it is not true."

To the great majority of your readers such a discussion as this is, of course, wholly uninteresting, and I shall add but a few words. It is always amusing to overhear contentions for priority of discovery and the arguments advanced to dispute the claim. Personally I care too little about the affair to again bother you with a communication, and I promise future silence whatsoever the provocation. The rivalry of "the University graduate" and Professor Politzer does not seem to me pertinent, except with a negative prefix to the word. The Viennese must look to their own otological laurels.

But lest it appear on the part of your readers, who value truth more than prejudice, that I fear to meet the issue, I will say:

(1) In no regular text-book on Ophthalmology published, be it Graefe and Saemisch, DeWecker and Landolt, Wells, Noyes, Berry, Juler, Meyer, Swanzy, Nettleship, Gowers, etc., is there the faintest hint of a knowledge of the fundus lesion, together with the symptomatology and etiology that I have tried to describe. If anywhere, such an etiology would certainly be included in Gowers' famous "Ophthalmoscopy," and in Hutchinson's twelve groups of choroidal inflammations. My article is an attempt to explain the origin and significance of Hutchinson's third and fourth classes of central choroiditis. Whether I have succeeded is to be proved or disproved neither by an author's conceit of himself (myself) nor by a patently inapplicable criticism. The matter may surely be left to the judgment of time and of minds superior to both the would-be discoverer's and would-be critic's. From such I shall be happy to learn whether I am in part or entirely in error, and shall, without pique or reserve, refer to their judgment. I am indeed pleased to know that several such think quite differently from my critic.

(2) The references to certain articles in magazines and other serial publications cited by your correspondent are entirely upon different subjects and convey no hint of the theory I have tried to advance. A glance at my original paper would show this. Of the production of myopia and of other abnormalities in stretching globes; of the refraction changes caused thereby; of the pro-

duction of "conus," "drag" and other morbid conditions about the nerve-head; of the acute diffuse neuro-retinal or choroido-retinal congestions and inflammations consequent upon such globe-distention, or even consequent upon acute eye-strain; of fundus lesions, the result of systemic disease, etc.—of all these things there was no discussion or question. Knowledge of them was the property of the profession, thanks to the respected and reverenced names of your correspondent's citations. But I have never seen in medical literature an article, sentence or line that ascribed the peculiar localized lesion and attendant symptoms to the cause I suggested, or that even hinted such an etiology. If such an article or sentence existed prior to my paper, I shall be humbly, sincerely grateful to any friend or enemy who will point it out to me. Possibly, the peculiar chronic localized macular lesion (the varieties of central choroiditis) in non-stretching eyes does not exist; perhaps the peculiarities of the loss of visual acuity, disproportionately lessened response to lessened illumination, etc., are not attendant symptoms; perhaps, also, these things are not the chronic and direct results of uncorrected ametropia and insufficiency, beyond the powers of the muscles to neutralize—these are things for the profession generally to determine; they are not now, apparently, the questions at issue.

(3) The only just and apparently true point of criticism alluded to by your correspondent is that in relation to the fact of macular changes and visual symptoms being sometimes in the eye with the less ametropia. This I had long since found to be true, and I at first was inclined to think it argued dead against my theory. But I soon became convinced that these "exceptions prove the rule" in a sense not intended in the original Latin maxim. I have in such cases found, first, that the more damaged macula or the greater amblyopia under deficient illumination coincide with an unsymmetrical axis of astigmatism or one "against the rule." In my experience I have been surprised to find how often the astigmatic axis in one eye is a few degrees out of symmetry with that of the other. It is a corollary of my theory that such an eye would suffer greater "strain" or would suffer that peculiar strain causing *ex hypothesi* the lesion in question, although the ametropia of that eye were less than in its fellow. Secondly, insufficiency is in my original article distinctly included as a factor in the etiology, and I am more and more inclined to think I did not estimate it at its just value. It plays a greater rôle than I supposed. If one muscle of the less ametropic eye be subnormal in power it would produce precisely the condition (optical abnormalism, or imperfection of "definition" of the retinal image, with preserved desire and effort to create such "definition") that I have emphasized as causing "ametropic choroido-retinitis." This would explain the possible cases where no ametropia exists, but I have never seen such an instance.

Trusting you will pardon me for my last intrusion upon your space, I am, sirs, etc.,

GEO. M. GOULD.

119 South 17th St., Philadelphia.

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ORIGINAL ARTICLES.

LIGATION OF THE COMMON CAROTID ARTERY, IN A CHILD OF THREE AND ONE-HALF YEARS, FOR HEMORRHAGE FOLLOWING PERI-TONSILLAR ABSCESS: RECOVERY.[1]

By Thomas D. Dunn, M.D.,
West Chester, Pa.

The subject of my report to-night is a white boy, 3½ years of age, with dark hair, blue eyes and fair, transparent skin. He is the youngest of a family of three children—two boys and one girl. They have had no illnesses, aside from the little digestive troubles and colds to which children are liable. The parents are strong and healthy, though there is a decided disposition to tuberculosis in the mother's family. There has been no special tendency to quinsy, rheumatism or scrofula, and no hæmophilia in the family. At the time his cold was contracted the little patient was in good physical condition, his weight and strength being above those of the average child of his age.

When first seen by the family physician, Dr. Jacob Price, he had a high fever, rapid pulse, pain in right ear and redness of the fauces. Two days later, December 27, 1890, owing to the illness of Dr. Price, he came under my care. The temperature was then 103° F.; pulse 120, with no marked quickening of respiration. The tissues of the right side of the neck were extensively swollen, and he had difficulty in turning the head and opening the mouth. Swallowing was painful, on account of which the little sufferer refused nourishment. The breath was fetid, and the mouth contained considerable mucus.

Examination revealed the right tonsil greatly congested and swollen, nearly blocking the isthmus of the throat. The tonsil was not only inflamed, but the adjacent parts of the pharynx and palate were involved. A mixture of tincture of the chloride of iron and sweet spirits of nitre was prescribed.

[1] Read before the College of Physicians of Philadelphia, March 4, 1891.

With the exception of increased tumefaction of the tissues of the neck, there was little change in his condition the following day. The swelling now extended from the mastoid to the symphysis of the jaw. Temperature, 102° F.; pulse, 120. One-grain quinine suppositories were ordered, to which 1-12 grain of the extract of opium was added to secure rest.

December 29.—No change was noted.

In the evening of December 30, the abscess opened spontaneously, discharging a large amount of pus and considerable blood. On account of the latter I was summoned, but did not consider the hemorrhage alarming, regarding it rather as beneficial in relieving the congestion and swelling of the neck. It ceased before I left, without any application to the part. At midnight there was a slight discharge of blood.

At my morning visit he seemed decidedly better; temperature normal; deglutition less painful and swelling of neck diminished. At noon he was aroused from sleep by blood in the throat, and when I reached him, fifteen minutes later, he vomited several large clots. He fainted from loss of blood and was very anæmic; pulse, 124, and weak. An application of Monsel's solution on cotton to the point where the blood was escaping (between the tonsil and upper part of posterior palatine fold) stopped the hemorrhage at once. Broths, beef tea and hot milk, all highly salted, were freely given at short intervals.

Forty-eight hours after the first, a similar hemorrhage occurred, and a large handful of clots was vomited. The bleeding was checked at once by an application of powdered alum. It was followed by great exhaustion, fainting, a feeble, rapid pulse, and cold perspiration.

On January 2 and 3, similar severe hemorrhages occurred, and the situation of the child became exceedingly critical, notwithstanding the fact that he continued to take liquid nourishment and stimulants freely. In view of this it was thought that the time had come for operative interference, but for unavoidable reasons it was postponed.

On January 5 and 7, severe hemorrhages occurred, and were promptly checked as before by the same application.

Fortunately, at the time of each hemorrhage I was in my office, and reached the house not later than fifteen minutes after the bleeding began. Hoping to secure some pressure on the point of escape of the blood, a piece of twine was carried through the right nostril by means of a small, soft rubber catheter, and brought through the mouth. To this was attached a large wad of borated cotton, which was then carried carefully into the pharynx with post-nasal forceps and drawn firmly into the post-nasal chambers. No hemorrhage having occurred for forty-eight hours, the cotton was removed, but on removal there was slight oozing of blood, which was arrested by the usual measures. Applications of a weak solution of tincture of the chloride of iron were made every three hours, and an astringent spray was used hourly, hoping that by keeping up their continuous action the parts would be sufficiently contracted to prevent the blood forcing its way through the point of opening.

At noon a small lump in sub-maxillary region was discovered, which was considered a glandular swelling. At 4 o'clock it had increased, and by 11 o'clock P.M. there was a pulsating tumor, two and a half inches in length by one and a half in breadth, extending from the mastoid process beyond the angle of the jaw, and with each pulsation the jaw and head were elevated. The temperature at the time was 101° F.; pulse, 108, feeble and small. The child was in a drowsy condition, and for several hours had refused nourishment. The nature of the tumefaction appeared to me that of false aneurism, and the necessity of immediate ligation of the artery was impressed upon the parents.

To this they consented, and at midnight, with the assistance of Drs. Isaac Massey and Wm. Sharpless, the operation was commenced. From the uncertainty of the situation of the bleeding point and the danger of further loss of blood from opening the tumor, ligation of the common carotid above the omo-hyoid was elected. The boy was given a few drops of chloroform to inhale, to avoid ether excitement, and anæsthesia then completed with the latter drug. After a thorough antiseptic toilet of the neck, the patient was wrapped in flannel and placed on his back, with head turned to left side. An incision was made two and a half inches long, beginning a little below the angle of the jaw, along the anterior border of the sterno-mastoid muscle to a level with the cricoid cartilage. Careful dissection was made, and in a short time the artery exposed without injury to any important structure.

A catgut ligature was used and ends cut close to the knot. After introducing catgut drainage, the wound was closed with silk sutures and dressed with iodoform and bichloride gauze. The operation was borne well and with but little loss of blood. What did ooze was of a pale wine-color. In fact, it was so watery that the structures could be seen through the little pool which formed in the wound. The pulsating tumor previously described decreased in an hour to one-half its former size, and in thirty-six hours was the size of an almond. Before daylight he took freely of hot milk and stimulants, and at 8 A.M. the temperature was 99°; pulse 96; respiration normal. No difficulty or pain in turning head.

January 11.—The temperature was normal, and there was no subsequent elevation.

Recovery was rapid and uninterrupted. The wound united without suppuration, and on the eighth day the stitches were removed.

The rapidity with which the child made blood was remarkable. It would have been interesting to note the record as shown by a hæmoglobinometer.

It is obviously impossible to determine the exact vessel involved in the ulceration, but from the character of the hemorrhages it must have been an important one. The abscess was deep-seated and was more a peritonsillar one than is usually seen.

My object in bringing this report before the College is to call the attention of the Fellows to the youth of my patient and the unusual character of the hemorrhage. Parenchymatous inflammation of the tonsil is rare in children. In 1,000 cases treated by Sir Morell Mackenzie,[1] at the Hospital for Diseases of the Throat, there were only thirty-five cases under 10 years of age. Dr. Beverly Robinson,[2] in speaking of the age at which deep-seated inflammation of the tonsil occurs in children, says: "I cannot recall a single instance in which I have seen suppurative tonsillitis in a small child." Dr. Goodhart[3] (quoted by Robinson) reports the case of a girl, 6 years of age, who, when she came under his care, showed a large, deep ulcer, "which could," he thinks, "only have originated in acute suppuration of the tonsil." A case is reported by Norton,[4] in which the disease in a little girl, 4 years of age, terminated fatally from hemorrhage, the abscess having ulcerated into the carotid artery. Except this case, I have been unable to find an instance of the disease under the age of 6 years.

Two fatal adult cases have been recorded, the result of ulceration of the bloodvessels in deep-seated suppuration of the tonsil. Cayton's[5] case, a man, aged 30, good constitution, had acute suppuration of the left tonsil. The abscess opened spontaneously during his absence, and the patient died suddenly. He had intended to open it on his return, and expresses great satisfaction that he had not done so—a feeling which I can heartily appreciate. The autopsy showed ulceration of the carotid artery. The case of Müller[6] was a male, 44 years of age, a farmer, always healthy. The trouble began with sore throat from cold, the tonsil subsequently becoming involved. The abscess opened spontaneously, and there were nine severe hemorrhages in which between three and four pounds of blood were lost. Intervals of several hours elapsed between the hemorrhages, as in the case herein recorded. The man died without oper-

[1] Pharynx, Larynx, and Trachea, p. 37.
[2] Keating, Cyclopædia of Diseases of Children, Vol. II, p. 441.
[3] Diseases of Children, p. 105.
[4] The Throat and Larynx, 1875.
[5] Annales de la Société Med. Chir. de Bruges, p. 195.
[6] Med. Correspondenz Bl. Würtemburg, 1853.

ation, and the autopsy showed ulceration of the third branch of the carotid. Mackenzie[1] mentions a case related by Grisolle,[2] in which serious hemorrhage followed abscess of tonsil. I have searched for a detailed report of this case in the Library of the College of Physicians, Philadelphia, and in the Washington Army and Navy Medical Library, but the 1862 edition of his work is not in their possession, and the case is not mentioned in the editions of 1844, 1857 or 1869.

In none of these instances was there a resort to operation, unless it was in Grisolle's, a detailed description of which, unfortunately, I have been unable to obtain. Through the kindness of Dr. Wise, of the Army Medical Museum and Library at Washington, I had access to the advance sheets of the Index Catalogue, and no record of other cases could be found. There are, however, on record a number of instances of abscess of neck, in which life was saved by prompt operation. Dolbeau[3] relates the case of a girl, aged 16, with sub-maxillary abscess of right side, with perforation of lingual artery and successive hemorrhages. The external carotid was ligated successfully, and the patient recovered. Liston reports a case of sub-maxillary abscess, with rupture of carotid and sudden death.

Alarming hemorrhages have complicated operations on the tonsils. "McCarthy, in a case of excision of the tonsils followed by continuous bleeding, in the London Hospital, tied the carotid artery with success." Dr. Agnew[4] relates this case, and also states that the carotid artery has in several instances been injured by reckless and bungling operators. Velpeau (quoted by Agnew) records four cases of this kind.

GONORRHŒAL EPIDIDYMITIS.

By Edward Martin, M.D.,
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and
A. C. Wood, M.D.

Epididymitis, the most frequent complication of gonorrhœa, commonly develops the third, fourth or fifth weeks of the urethral inflammation, that is about the period when the posterior urethra becomes involved. Cases are reported in which the epididymus was attacked within the first few days of a urethritis. Since a gonorrhœal inflammation, so rapid in its extension as to reach the posterior urethra in this short time, is most exceptional, we believe there must be some peculiar circumstance to account for this unusual course.

[1] Pharynx, Larynx and Trachea, p. 37.
[2] Traitè de Pathol. Interne, Paris, 1862, t. i, p. 269.
[3] Bull. Soc. de Chir. de Par. (1864), 1865, 2 T., V, 180-187.
[4] System of Surgery, vol. ii, p. 991.

In one case of our own an epididymitis was seen within a week after the appearance of a first attack of gonorrhœa. On careful examination a history of local injury inflicted *in coitu* was elicited. We saw another case develop epididymitis three days after the appearance of the urethral inflammation. This was, however, occasioned by the passage of a sound which, by carrying the micro-organisms to the ejaculatory ducts, acted as effectively in starting the inflammation along the vas deferens as would the development of the posterior urethritis.

As long as there are any traces of a posterior gonorrhœa, it is possible that the inflammation may be carried in an acute form along the cord. Fournier cites cases occurring four years after the attack of gonorrhœa.

Authors vary greatly in their statements as to the frequency of epididymitis. Rollet found that out of twenty-five hundred cases of urethritis the epididymus was involved in about 27 per cent. Finger observed this complication in 30 per cent., Phillips in 15 per cent., Fournier in 12.5 per cent., Tarnowsky in 12.2 per cent. Since the majority of these figures are the result of analyses of hospital cases, it is probable that they are misleading, as nearly all patients afflicted with epididymitis are forced to seek medical aid, while a very large number pass through all the stages of an acute gonorrhœa practically without treatment. A surgeon who, in his private practice, has one patient out of every three, or even out of every ten, suffer from involvement of the epididymus, would certainly not be satisfied with his results.

In its relation to prophylaxis the causes which favor extension of gonorrhœal inflammation to the epididymus merit careful consideration. Of all these we believe the most potent is the neglect of treatment, especially when combined with bodily activity. Of the cases which have come under our observation, the very great majority have received no treatment, either local or by the mouth; a few have put themselves in charge of accommodating druggists. Le Fort (quoted by Finger) found that of 576 cases 264 had received no treatment, while only sixty gave a history of having employed balsams and injections.

The effect of violent and prolonged muscular exertion is well shown in the history of the following case :

A., student, acquired gonorrhœa at the age of 13. He applied no treatment to this, though he suffered greatly from ardor urinæ, chordee and profuse discharge. At the end of four weeks, though his symptoms were still severe, he played a Thanksgiving game of football, being captain of his school nine. Within the next three days both testicles became acutely inflamed. The constitutional symptoms were especially marked, the patient remaining delirious for two weeks. At the end of that time he slowly recovered. There was still a profuse bloody discharge from the urethra. This ran into a gleet, which lasted one year, and then underwent spontaneous resolution.

Sexual excitement is, perhaps, next to neglect of treatment, the most important factor in determining the extension of gonorrhœa along the vas deferens. On this point it is often difficult to elicit a satisfactory history. In one of our cases, who suffered from three attacks of inflammation of the epididymus recurring at short intervals, and who persistently denied venery as a

cause, it was subsequently proved that all his attacks immediately followed sexual excess. The inflammation of the posterior urethra in itself engenders an erythism manifested by persistent erections and by frequent emissions, resulting not merely in long-continued congestions, but mechanically favoring the entrance of gonococci into the ejaculatory ducts.

Any pathological condition, such as varicocele, displacement, contusion or congestion, seems to predispose to involvement of the epididymus in the gonorrhœal process.

A weak constitution, such as is found in strumous patients, or such as is developed by continued fevers, lack of exercise, excesses or bad hygiene, strongly predisposes to the development of epididymitis. While we have seen gonorrhœa expend its force with explosive violence upon the sanguine and robust, it is particularly weakly persons, exhibiting symptoms of moderate intensity, whom we watch for the early signs of testicular trouble.

The disease is usually unilateral, and seems, according to Julien, to have no special predilection for either side. Sigmund, however (quoted by White), found in 1,342 cases that the left testicle was affected in sixty-six per cent. The inflammation usually expends its violence upon the tail of the epididymus, though both the head and body may be involved. There is an acute catarrhal condition with involvement, not only of the epithelium and the walls of the ducts, but also of the surrounding cellular tissue. There is an abundant round-celled infiltration, and, on cross-section, small cavities filled with a puriform liquid have been frequently noted. These are dilated portions of the ducts.

The testicle is very rarely involved ; the tunica vaginalis, however, nearly always participates in the inflammation, a plastic or serous exudate being thrown out, frequently in considerable quantity. The loose cellular tissue surrounding the cord and covering the portion of epididymus not included in the reflection of the tunica vaginalis also becomes greatly infiltrated, completely masking the epididymus proper and rendering exceedingly difficult any just estimate as to the amount of enlargement.

As the inflammation subsides, the greater portion of the inflammatory exudate undergoes resolution ; a certain part, however, organizes into fibrous tissue, which may produce a general hardening of the organ, or may form distinct nodules. In the latter case the induration is most frequently found in the tail of the epididymus, and at times occasions obstruction to the duct. Thus Gosselin reports several cases in which, on dissection, the lower end of the epididymus was found obliterated in a mass of dense fibro-cellular tissue, apparently resulting from previous inflammation. There are, however, many recorded cases where, with marked induration, there was no obstruction, and, *per contra*, other instances are noted where, without induration, the passage of the spermatozoa was entirely prevented. Should suppuration take place, however, there is liable to be an extensive destruction of the tubular elements of the epididymus.

Even should obstruction to the efferent duct or the vas deferens result, atrophy, or even marked change in the testicle, does not necessarily follow. Curling and Gosselin adduce several observations in which there was oblitera-

tion of the duct in the tail of the epididymus, without alteration in the normal appearance of the glands. Hunter, Gosselin, Brugnane and Bosscha all observed cases in which there was a break in the continuity of the vas deferens from congenital malformation; notwithstanding this fact the testicle was normal in size and appearance, and in some instances contained spermatozoa. Cooper divided the vas deferens of a dog, keeping the animal for six years, during which time he was seen twice *in coitu*. The testicle was found enlarged, and the portion of the deferens attached to the testicle was much distended with semen.' Gosselin observed a man who suffered from orchitis and atrophy of one testicle and from gonorrhœal inflammation of the other. Twenty-five years later no spermatozoa could be found in his semen, though repeated examinations were made and the ejaculation was encouraged by natural stimulus. Subsequently an encysted hydrocele developed. It was tapped and was found swarming with spermatozoa.

These facts evidently show that the testicle is not amenable to the laws governing other glands. It would not seem credible that after complete obliteration of the efferent duct for many years, the glandular structure of the testicle should maintain its health and activity were this not abundantly confirmed by clinical evidence.

The symptoms of gonorrhœal epididymitis are usually inaugurated in patients of the better class by dull, dragging pains in the groin, particularly noticeable on standing or walking. This pain may be darting or shooting, may radiate from the groin down the thighs into the rectum, or in various directions, and may even become so violent as to simulate the suffering incident to an acute strangulation of the gut. At times enlargement of the vas deferens or the cord may be distinctly felt at the point where the latter passes from the external abdominal ring.

In a few hours, or at most one or two days, unless the extension of the process is arrested, the symptoms of acute inflammation will become manifested about the epididymus. The body of the testicle is at first perfectly normal; the epididymus seems to become almost immediately enlarged to a very great extent. This tumefaction is in reality due mainly to infiltration of the loose cellular tissue involving the posterior upper border of the epididymus and continuous with the tissues of the cord. The skin of the scrotum becomes hot, red and œdematous. Koenig states that this œdema is particularly characteristic of epididymitis. The pain is sickening, intense, wearing, constant; tenderness is exceedingly well marked. There is quickly an effusion into the tunica vaginalis; this may be limited in quantity to a few drops and may be confined to the neighborhood of the epididymus by adhesive inflammation, or there may be a quantity so considerable that the testicle is entirely concealed.

Inflammations of every grade of intensity are observed; at times the symptoms are so slight that the patient complains only of a dragging sensation and the mechanical discomfort of the swelling. Again, the violence of the inflammation may run the temperature to 105° F., while the pain and tenderness may produce complete prostration. Coincident with the onset of the inflammation

frequent emissions take place, the semen at times being blood-stained, more frequently of a yellowish or greenish hue.

In six to eight days the disease has passed its acute stage ; the temperature usually drops to normal before this. In two or three weeks the swelling has disappeared, leaving a somewhat hardened, nodulated epididymus. Relapses are, however, frequent, and the first attack seems to predispose to others.

The prognosis of gonorrhœal epididymitis is, in so far as the acute symptoms are concerned, always good. Cases of peritonitis resulting from extension of the inflammation along the cellular tissues of the cord, or of septic poisoning consequent upon abscess formation, are so rare at the present day that they can well be considered as surgical curiosities. Even should suppuration take place, resolution after evacuation of pus is practically assured, though troublesome sinuses may remain for a long time.

Atrophy of the testicle has at times been observed and has been attributed to obliteration of the lumen of the vas, or the convoluted tube. Since autopsy records, experiments and clinical observations have abundantly proved that such obstruction is not followed by any appreciable change in the testicle, it is evident that another cause for the occasional wasting must be sought. This may depend either upon involvement of the testicle in the original inflammation with subsequent sclerosis, or in obliteration of the vascular supply by cicatricial contractions.

Although obliteration of the ducts does not necessarily produce wasting of the testicle, it inevitably prevents passage of the spermatozoa, and, if the obstruction occurs on both sides, results in sterility. This sterility is not accompanied by impotence, and usually there is not even impairment of sexual power. The ejaculation contains all the element of normal sperma except the spermatozoa. At the time of ejaculation there may be experienced a dull pain in the testicle, though this is frequently not noticed.

It is of vital importance to determine with what frequency this obliteration remains as a permanent result of epididymitis. Nearly all authorities are agreed upon the point that double epididymitis results in incurable sterility in the great majority of cases. From this would necessarily follow the corollary that epididymitis of one side nearly always cuts off the secretion of the involved testicle. Since there is no characteristic change in the organ as the result of obliteration, evidence on the subject is hard to find. It can only be obtained by examining the semen of patients who have had double epididymitis or of patients who have had epididymitis in their one secreting testicle. Thus, Axford reports a case of epididymitis occurring in the right testicle, the left never having descended. On recovery from the acute attack the semen was without spermatozoa, though there was unimpaired virility. Induration of both globus major and globus minor was marked. After a two months' inunction of resolvent ointments, spermatozoa again appeared. Here it is evident that obstruction was temporary, since there was but one secreting testicle.

Gosselin examined the semen of fifteen cases of comparatively recent double epididymitis, all showing callosity in the globus minor. All were pos-

sessed of full virility—in none were spermatozoa found. All but two cases disappeared; these two were treated for some months, as a result of which spermatozoa reappeared coincident with the resolution of the induration of one side. Five other cases of long standing consulted him; in one there was no callosity on the left side and spermatozoa were found. The other four exhibited hardening on both sides, and no spermatozoa could be discovered.

Godard records five cases of double epididymitis. Three were comparatively recent. In two, after some months, the spermatozoa again appeared in the semen. The third case disappeared. Two cases suffered from double epididymitis many years before, and consulted Godard for the resultant sterility.

Liegois observed twenty-eight cases of double epididymitis, in seven of whom spermatozoa again appeared some time after the subsidence of the acute process; in two of these cured cases there remained induration on both sides. Of the cases in which sterility resulted there were a number in which no induration could be detected. It was noted that all the cases in which the spermatozoa again appeared exhibited a mild form of the disease, and in some the history of preceding acute inflammation of the urethra was not clear.

Godard states that sterility nearly always results from an attack of double epididymitis, since of thirty-five subjects attacked spermatozoa were absent in the ejaculation of all. Gosselin, Curling, Terrillon and the majority of genito-urinary surgeons are of the same opinion. This belief seems to be thoroughly substantiated by statistical study, since White states that of 117 cases of this character collected from various sources, only thirteen are recorded as experiencing any improvement from treatment.

We believe that the results of a study of reported cases are misleading. A person suffering from double epididymitis disappears after two or three weeks of medical treatment. Provided no further local trouble develops, he will give little thought to the condition of his testicles. Still less will he be liable to consult a surgeon years after, should he marry and become the father of healthy children. Should he fail to procreate, however, in his many inquiries as to possible causes for this, he will soon learn the alleged effect of inflammation of the testicles, and will promptly report for medical attention. Hence, the sterile cases nearly always seek medical advice, whilst those in whom the ducts remain patulous are not observed.

It has been shown that a sterility of months or even years may disappear under treatment. Hence, observation of patients immediately after an attack of double epididymitis is not sufficient to settle the question of permanent crippling.

It should be noted that of Gosselin's fifteen cases only two remained under observation, and that in both of these cases spermatozoa reappeared. Two recent cases treated by Godard also entirely recovered. Fournier believes that complete restoration may take place in a much larger number of cases than is generally conceded.

Our own experience suggests that the prognosis in double epididymitis is distinctly favorable. We have examined the semen of four cases.

The first, a case of double epididymitis of unusual violence, occurring at the age of 13, has been already described. Ten years after this attack no induration of either epididymus could be found. The semen was swarming with active spermatozoa.

The second case, a man, aged 30, under treatment for acquired syphilis, suffered from a severe attack of double epididymitis ten years ago. He has had no trouble referable to the testicle since. Slight induration of the epididymus of each side was noted on examination. There were no nodules. The semen was swarming with active spermatozoa.

The third case, a man, aged 24, suffered from gonorrhœa seven years ago. This recurred frequently. Three years ago he had a swelled testicle (left) after passage of sounds; shortly after this he married, and is now the father of a healthy boy. One year ago he came for treatment on account of swelling of the right testicle; this, he said, was occasioned by a blow. The cord was greatly thickened and there was urethral discharge. The swelled testicle underwent prompt resolution, but a large induration was felt in the globus minori of each epididymus. Four months later his semen was examined; no spermatozoa were found. Under resolvent treatment the nodules of induration have steadily decreased in size; they have not yet disappeared, nor is there a return of the spermatozoa, though the case cannot yet be regarded as hopeless. The last microscopical examination was made a little short of one year after the inflammation of the right epididymus.

The fourth case, a man of about 30 years, was under treatment for acquired syphilis. He has suffered from gonorrhœa many times. Fourteen months ago, after passing a sound, acute epididymitis of the right side developed. This confined him to bed for about a week. Six months later, consequent on excessive venery, the left epididymus became inflamed. This confined him to bed for ten days. At the time of reporting he was suffering from gleet. The globus minor of each epididymus was indurated.

Examination of his semen showed it scanty in quantity, but containing many spermatozoa—some deformed, but the majority of perfect shape. They were not, however, so numerous as is usually the case with healthy individuals.

We examined the semen of two other cases, who, many years before, suffered from double epididymitis. In both these was entire absence of spermatozoa. Both sought medical advice, because after marriage no children had been born.

From this very limited experience it would seem that not only is there a chance that the ducts may become patulous, but that there is a strong probability that this result will take place in the majority of cases.

It has been claimed that epididymitis of one side causes a disappearance of spermatozoa during and after its active stage, and is not infrequently followed by permanent sterility. Liegois examined sixteen subjects suffering from unilateral epididymitis. Thirteen were examined immediately after the disappearance of acute symptoms. Very few spermatozoa were found in twelve. In three subjects spermatozoa were very infrequent for some time after cure. Hirtz states that he has seen several instances of permanent sterility resulting from unilateral orchitis. Duplay and Gosselin found, upon *post-mortem* examination, that the obliteration of one epididymus was at times characterized by absence of spermatozoa in both testicles.

We have but one observation upon this point:

A stout young laborer presented himself with the symptoms of acute epididymitis. Under treatment he was practically well in two weeks. At this time his semen was examined. Very few spermatozoa could be found, certainly not one-thousandth portion of the number normally present. Two months later the semen was again examined. Twenty-four hours after ejaculation it was found to be swarming with active spermatozoa.

We have no explanation to offer as to why an inflammation of one side should seriously affect the function of the other testicle.

In regard to the treatment of gonorrhœal epididymitis, we believe that much can be done to prevent the appearance of this serious complication. The avoidance of all causes which tend to exacerbate the posterior urethritis, particularly irritating injections, instrumentation, excesses of any kind or a full rectum or bladder, is universally advised. The wearing of a suspensory bandage is also warmly commended.

Probably the most effective preventive is the continued use of antiseptics by the mouth. Of these various combinations, the most satisfactory in its results is that suggested by White. Four to six capsules are given daily, each containing five to ten grains of salol, together with copaiba, cubebs and pepsin.

As the epididymus is only reached from the urethra by means of the vas deferens and cord, the inflammation must necessarily pass along these structures, and may be expected to exhibit characteristic symptoms before it has reached the testicle. As a matter of fact such symptoms are nearly always present. The dragging pain in the inguinal region of the affected side, together with tenderness and increased resistance along the cord, shows in what direction the inflammation is travelling. Prompt treatment may save the epididymus, the case not proceeding further than a funiculitis. One such case we have observed, and a number of similar ones have been reported. In the case we treated the epididymitis was aborted by immediately placing the patient in bed, applying active counter-irritation to the skin of the inguinal region, and elevating the testicle.

When the disease is fully developed, we believe that a proper selection, from the innumerable methods of local and general treatment advised, readily can be made. Locally the application of a modification of the Langlebert-Horand suspensory bandage, supplemented in severe cases by incision into either the tunica vaginalis, or the distended cellular tissue back of the epididymus and above it, will almost immediately subdue pain and secure a rapid resolution of the symptoms of acute inflammation. A continuance of the same dressing, with the application of mercury and belladonna ointments, will produce prompt disappearance of fibrous nodules. Constitutionally the administration of any bland fever mixture in the acute stage, followed by small doses of iodide of potassium till induration disappears, is all that is required. Of course, the bowels must be kept soluble, and the urine should not be allowed to become strongly acid.

Medicines, such as pulsatilla, which have been vaunted as specifics, have, on extended trial, been found to be utterly useless. The good effects attributed to this drug are probably due to the fact that epididymitis of itself not infrequently runs a mild course.

The Langlebert-Horand bandage applies to the relief of inflammation the most potent remedies of the surgeon's armamentarium—namely, heat, moisture, rest and pressure. The scrotum is first enveloped in cotton, over this is placed a sheet of rubber dam, finally a stout suspensory bandage is applied. The bag of this bandage is shallow, and at the sides are gores which are provided

with eyelets and laces. By lacing at the sides the bandage may be made, not only to press the affected organ upward against the body, but also to exert lateral pressure, so that the testicle is everywhere evenly and uniformly supported.

Horand treated 200 cases by this dressing. In one, on account of marked involvement of the cord, the bandage was painful. In two others epididymitis of the other side developed. In the others there was practically complete relief from suffering in from thirty to sixty minutes. The patients were enabled to attend to their ordinary vocations, and resolution followed in a remarkably short time. These results of Horand are abundantly confirmed by other observers.

We have had made a modification of the Langlebert-Horand bandage, with which we have obtained results as gratifying as those reported by French observers. The body of the suspensory is made of Mackintosh, lined with stout cloth; this supplies the place of the rubber dam and is more readily adjusted. Cotton wool or ordinary cotton batting is better than absorbent cotton, since the free sweating occasioned by the close application of the rubber has a tendency to cause wadding. By means of this dressing we have promptly relieved the suffering in all of the cases in which we applied it, the patients have been able to continue on their feet, and the disease has run a rapid and benign course. When the inflammation is acute, the swelling marked, the pain intense, puncture of the vaginal tunic or of the inflamed cellular tissue is indicated. These punctures should not be carried into the tunic albuginea.

It is true Vidal reports 400 cases, and Smith 1,000 cases, where puncture of the albuginea resulted in no harm to the patient and greatly ameliorated his suffering. There is no proof that either of these surgeons punctured more deeply than the vaginal tunic, nor is there any reason why they should do so, since an incision carried thus far as effectually relieves pain as one carried into the substance of the gland. Castelnau, Demarquay, Salleron and others report cases of total extrusion of the testicle after puncture of the albuginea. The practice is, however, at the present day, universally condemned, the majority of textbooks merely mentioning it as a procedure to be avoided.

In puncture of the tunica vaginalis the knife can be entered to the depth of a quarter to a half inch, the seat of puncture being selected in accordance with the position of the testicle and the presence of fluctuation. Such punctures should always be made under full antiseptic precautions. When pus forms, free incisions are, of course, indicated.

We believe the treatment outlined above is all that will be required for the cure of even the most active forms of inflammation of the epididymus.

Conclusions.

(1) Gonorrhœal epididymitis occurs most frequently in those who have received no treatment for the original urethritis. Its outbreak is frequently determined by violent or long-continued physical exertion, or by venereal excess.

(2) The resultant induration of a gonorrhœal epididymitis does not cause obliteration of the convoluted duct in the majority of cases. Statistics on this point are misleading, from the fact that it is practically only the few sterile patients who are subsequently observed by surgeons, and hence these form the greater number of the reported tabulations.

Of four cases of double epididymitis observed by us, not under treatment for sterility, there was an abundant discharge of spermatozoa in three.

(3) Unilateral epididymitis may, in exceptional cases, cause permanent sterility. During the acute attack very few spermatozoa are found in the semen.

(4) Obliteration of the duct does not cause atrophy of the testicle.

(5) Pain, tenderness and swelling in the groin, dependent on funiculitis, practically always precede gonorrhœal epididymitis. Prompt treatment at this stage may abort the inflammation of the epididymus.

(6) The development of gonorrhœal epididymitis is, in a great measure, avoided by the use of antiseptics by the mouth, and the application of a suspensory bandage to the scrotum.

(7) The pain and disability usually attendant on gonorrhœal epididymitis are promptly allayed by puncture, or aspiration of the serous exudate contained in the tunica vaginalis and the cellular tissue placed behind and above the epididymus, followed by the application to the scrotum of a thick layer of cotton, over which is placed a Mackintosh suspensory, so made that it presses the inflamed organ upward against the pubes, and, by means of lacings at the side, can be so drawn in that uniform lateral support is secured. Punctures are necessary only in the most acute cases.

(8) The subsequent induration after the acute stage is most quickly resolved by a continuance of the dressing above described, together with the local application of belladonna and mercury ointment, and the internal administration of iodide of potassium.

HIP-JOINT AMPUTATION FOR RECURRENT LYMPHO-SARCOMA. PRELIMINARY LAPAROTOMY AND DIRECT COMPRESSION OF THE AORTA: RECOVERY.

By Neal Hardy, M.D.,

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John Pontius, aged 34, sparely built, and of nervous temperament, presented himself for examination, March 20, 1890, with the following history: Twelve years ago a small, round, painless and deeply-seated tumor made its appearance in the muscular structure of the outer and middle portion of the left thigh. On being excised it recurred again and again,

each time new growths springing up, multiplying in number and disseminating themselves further into the muscular tissue, until they had assumed enormous dimensions, extending from the groin several inches below the knee, involving the popliteal region, knee-joint, periosteum, muscles, tendons, nerves and bloodvessels, and encircling two-thirds of the leg.

I diagnosticated sarcoma, and advised amputation at the hip-joint, to which the patient objected, but consented to extirpation of the growths, the operation being made soon after, and requiring more than four hours for its accomplishment.

Innumerable growths, some the size of an orange, others of diminutive proportions, jelly-like in color and consistence, which by the aid of the microscope showed round, sarcomatous cells, were removed.

The wound, which was twenty-two inches in length, quickly and kindly healed, and in one month the patient was able to follow his vocation, with but little discomfort and with flattering prospects of ultimate recovery. Six months later numerous nodules again made their appearance, growing more rapidly than before, and within four months the limb had again reached gigantic proportions, in circumference nearly equalling that of the body. It was very vascular, with discoloration of the cuticle and threatened gangrene, making, on November 28, 1890, amputation imperative.

The immense size of the leg, every vessel of which was distended with blood nearly to the limit of its capacity, and its irregular and nodulated condition from the presence of growths, made it apparent that the blood could not be forced into the general circulation by the aid of an elastic bandage, and thus contribute to the strength of this anæmic and emaciated patient. Again, compression of the femoral artery would not prevent profuse hemorrhage following the division of the profunda and obturator arteries and their branches, thus greatly enhancing the danger. Further, the employment of the abdominal tourniquet for compressing the descending aorta was unadvisable owing to the uncertainty in locating the vessel and in placing the instrument directly over it, while the danger of doing irreparable injury to abdominal viscera renders its use exceedingly unreliable and dangerous.

With the above enumerated and apparently insuperable obstacles, and with a sense of responsibility almost oppressive in degree, well knowing that if I amputated after the manner described in all surgical works I would only be sounding the death-knell of my patient, and also knowing that experiment is the chief instrument of exact science, I deliberately concluded to inaugurate a new mode of amputating—one which would with certainty enable me to control hemorrhage—viz., that of first performing a laparotomy, and thus affording an avenue for the direct compression of the descending aorta. I concluded if the operation was performed under the strictest observance of antiseptic precautions that the additional shock accompanying the double capital operation would be more than compensated by the saving of blood. The operation was accordingly carried out in the following manner:

The parts were closely shaved, then well cleansed with soap and water, and finally washed with a 1-1000 solution of bichloride of mercury. Towels saturated in the same solution were placed around the area of operation. The instruments were kept immersed in a five per cent. solution of carbolic acid when not in use.

A section three inches long, and one inch to the left of the umbilicus, was made through the abdominal wall, sufficiently large to admit the passage of the fingers. I now, as a test, held the descending aorta firmly between my finger and the posterior abdominal wall, and thus completely arrested circulation in the lower extremities; my friend, Doctor Heaton,

compressed the artery in the same manner, whilst I amputated at the hip-joint, by introducing a straight, single-edged amputating-knife, just above and one inch in front of the trochanter major, the edge of the knife being directed downward, in the line of the axis of the limb; from this point the knife was made to penetrate transversely, and with a slight inclination backward, so as to strike the head of the femur in its upper half and near the upper margin of the acetabulum; then inclining a little backward, the head of the femur was struck on its outer aspect, the point of the knife passing safely between the head of the bone and the anterior crural nerve and femoral vessels, penetrating the capsule in its descent over the head of the femur, passing under the ilio-femoral ligament, psoas-magnus, and iliacus internus and emerging just below the tuberosity of the ischium. The anterior flap was rapidly completed; then by a crucial incision through the capsule and rotary movement of the leg downward and outward disarticulation was accomplished. After dividing the ligamentum-teres, the amputating-knife was placed back of the head of the bone, and the posterior flap made. The arteries were ligated, the muscles and integument were coaptated, and a dry antiseptic dressing was applied over both wounds. The amputation was accomplished in fifty seconds.

The patient during the amputation became cyanotic, but was soon relieved on pressure being removed from the aorta. In anticipation of severe shock, and in order to counteract its deleterious effects, stimulants, heart tonics, with morphia and atropia hypodermically, were administered.

Following the operation there was some fluctuation of temperature, but never an alarming rise. The wounds healed mostly by first intention.

I have purposely avoided unnecessary details, and desire at once to call attention to this method. It is the first operation of the kind ever performed in my experience, which necessarily is limited; yet I believe the theory to be substantially sound, and that it is a feasible method, and will obtain among surgical procedures.

I venture the prediction that hereafter the operation will be made exclusively in this manner, and by so doing the now appalling mortality in hip-joint amputations, averaging more than eighty per cent., will be reduced fifty per cent. by the adoption of this method.

Four months have elapsed since the operations were performed, and, as yet, there are no indications of a recurrence of the sarcoma.

MEMORANDA.

PANCREATIC CYST—REMOVAL BY LAPAROTOMY—RECOVERY.

MRS. K., aged 26, married three years, was sent to my care by Dr. Lacier, suffering from an abdominal tumor. She had one healthy child, but fifteen months previously had miscarried. Her family history was quite good, with the exception of neuralgic attacks in different parts of the body, with which she and her mother, one sister and a brother, have in common been afflicted.

About six weeks after her first child was born she began to experience frequent cramps in the epigastric region. As these occurred generally after eating, they were very naturally attributed to some disorder of the digestive apparatus. After a time these localized attacks of pain were followed by vomiting, which afforded marked relief, or terminated the spasmodic suffering. These attacks continued at irregular intervals for several months, when a swelling was discovered by her physician, quite circumscribed and movable, and occupying apparently the left hypochondriac region. Sometimes it would be very distinct, and at other times would entirely disappear.

When the patient came under my care, the tumor was very large, centrally located, movable in any direction except downward, tense and elastic. The woman suffered constant pain, and only obtained relief by the daily use of morphine. For the last six months she had spells of severe diarrhœa. A peculiar feature connected with the enlargement was its constant alteration in form and resistance, some days being spherical and hard, and on other days ovoidal and flaccid, characters which possessed some value from a diagnostic point of view as indicating a cyst, the fluid contents of which found a place of escape when the walls became overdistended, and had, no doubt, much to do with the diarrhœa that frequently occurred. The resonance over the abdominal walls indicated that the cyst was probably deeply located behind the hollow viscera.

The operation consisted in opening the abdominal cavity through the linea alba, dividing the gastro-colic omentum, and exposing the wall of the cyst. The latter being tapped, between two and three gallons of a light-brown fluid were removed. Exploration with the finger showed that the cyst was attached high up, behind the stomach, to the pancreas, and had contracted adhesions so general that an attempt made to detach these connections was soon abandoned. After thoroughly washing out the interior of the sac with a solution of boric acid, its opening was stitched on the external wound of the abdominal parieties, and the whole dressed as after an ordinary laparotomy.

The subsequent discharge from the cyst was never large in amount, and daily became less until after the lapse of two weeks, when no discharge whatever occurred. The woman was sent home after four weeks, perfectly well. Over a year has elapsed, and as no return has been reported, I believe the cure is a permanent one.

D. Hayes Agnew, M.D., LL.D.,
Emeritus Professor of Surgery, University of Pennsylvania.

CEREBRAL HYPERÆMIA RESULTING FATALLY.

Dr. Rudolph E. Gerlach, of Trenton, N. J., while making an autopsy, March 13, 1891, was seized with an attack, which is described below, and died five hours later.

The absence of certain data makes the writer hesitate about reporting the case, which none the less seems worthy of record, for the very reason that there was an absence, during life, of symptoms that seemed to foreshadow such a sudden termination, from the fact that the patient had recovered from at least two very severe attacks of the same kind within the last six months (how many more, if any, he may have had before is unknown), and from the fact that he referred his symptoms to a tumor, which he believed to be in his brain. To get a clear idea of the case, we must review a short period of his life.

In November, 1890, and again in February, 1891, Dr. G. had severe attacks, similar to the one that carried him off, and less severe ones in the interim. These attacks were as follows: Obstinate vomiting, repeated ten or twenty times in half a day, and easily induced by the slightest indiscretion in diet; intense pain in the head, located at left vertex and over the region of the cerebellum, and continuous during the last one or two weeks of his life; obstinate constipation; diplopia; and dizziness. There was choroido-retinitis, with pain in the eyes, aggravated by use. During the last attack, he remarked that he was getting deaf, probably having tinnitus. The pupils were contracted.

When he left home on the fatal morning, he had severe pain in his head, and was weak from overwork and inability to eat much, on account of an irritable stomach. The stooping posture in making the autopsy aggravated his symptoms, causing vomiting, agonizing pain in his head and probably all the symptoms of the previous attacks. After enduring these for about two hours, with frequent expressions of intense suffering, he became semi-comatose, which condition gradually deepened until he died. He did not completely lose consciousness, but could be aroused until just before death.

The autopsy showed no trace of tumor of the brain, but there were intense injection of brain membranes and congestion of brain mass, and large effusion of cerebro-spinal fluid, the lateral ventricles being fully distended.

The kidneys were slightly enlarged, highly congested, and in their pelves was a considerable quantity of free pus. In the right kidney were found two small, hard, black calculi. The bladder was distended with urine. The spleen was slightly enlarged.

Taking into consideration the symptoms during life and the *post-mortem* appearances of congestion of cranial contents, and the large effusion into the brain cavities, we conclude that the cause of death was pressure upon the brain mass from *cerebral hyperæmia* and its consequences, which hyperæmia was due to overwork, impaired digestion and general nervous exhaustion. What part in the fatal issue the *pyelo-nephritis* played it is difficult to say, for only once did the doctor speak to the writer about any urinary trouble, and then in such vague terms that its seriousness did not impress itself upon him, and no account was taken of it.

The absence of anything like convulsions, delirium and respiratory symptoms, and the absence of suppression of urine, seem to preclude uræmia, although the presence of pus in the kidneys makes it difficult to think there was no septic infection, unless the kidney trouble was recent, and the brain condition overwhelmed all else and killed the patient before the pyelo-nephritis had time to act in its proper capacity, though it must have had an indirect influence in the fatal issue.

These, briefly, are the facts in the case; and the point to be observed, it seems to the writer, is the fact that the comparatively innocent symptoms of cerebral hyperæmia, if neglected and disregarded, may, by an acute exacerbation, overwhelm the vital functions of the brain and kill the subject before the organs have time to recover themselves. Spitzka, in "Pepper's System of Medicine," speaks of cerebral hyperæmia as being but rarely fatal, and this case offers sufficient apology for this paper, by impressing upon us the fact that this functional derangement, while usually amenable to treatment, may, if proper care is not exercised, suddenly result in a fatal issue.

Trenton, N. J. B. W. McGALLIARD, M.D.

ARISTOL IN DISEASES OF THE EYE.

THIS drug has been for some time before the medical profession as an application to wounds, ulcers and other conditions in which iodoform has proved of value. In its physical characteristics it is superior to iodoform by its greater lightness and finer state of pulverization. In its application to the eye these qualities are of much importance, as the mechanical irritation of small particles not sufficiently pulverized often exceeds the alterative effect which we wish to obtain. Apart from this, aristol seems to excite much less irritation than iodoform, even when finely powdered, and can be used with much greater freedom without exciting as much reaction. The faint odor which it possesses is another point greatly in its favor, especially when used around the face.

The class of cases in which it shows its effects most markedly comprises follicular inflammation of conjunctiva, phlyctenular disease of the cornea and conjunctiva, marginal blepharitis, ulcers and after-enucleation of the eyeball as a desiccant. In epithelioma of the eyelids, in my experience, it lessens the discharge from the ulcerating surface, but exerts no further action on the progress of the disease. In a case of lachrymal abscess, resulting in a large, sloughing ulcer, one centimetre in diameter, one week's treatment by aristol sufficed to close it entirely. In a case of enucleation of the eyeball occurring in the practice of my colleague, Dr. de Schweinitz, aristol was dusted in the socket immediately after the operation ; on opening the lids on the second day no discharge was visible, the aristol had collected in a little heap around the conjunctival opening, and on lifting this out, the centre, of the aristol, was found to be quite dry.

The rapidity with which phlyctenular diseases yield to its application is very satisfactory, and as its use causes very slight irritation, there is no pain attached to its employment. The largest field for its employment is probably here. As we often desire some preparation of iodine to be exhibited internally we avoid the risk of using calomel, which is free from odor, but is liable to produce sloughing of the conjunctiva when dusted into the eye while the patient is taking an iodide, and the unpleasant odor of iodoform, which is ntolerable to many persons, by employing aristol, which agrees with iodine compounds and is free from any noticeable odor.

In papillary trachoma it seemed only to aggravate the symptoms, and no beneficial results appeared to follow its use, but, on the contrary, the photophobia, lachrymation and corneal opacities increased ; this appeared to me to be due to the withholding of the proper treatment more than to any positively injurious influence of the aristol. In follicular trachoma its effect is very decided. The following case illustrates this :

Mary DeM., aged 15, Italian, states that "there is meat growing in her eyes." On everting the lids thick folds of conjunctiva roll forward. The surface is covered with large, translucent follicles, oval in shape, some of them 3 and 4 mm. in their longest diameter, being most numerous in the retrotarsal fold and on the contiguous bulbar conjunctiva, the cornea is clear ; no discharge from eyes, and no complaint of pain.

The conjunctiva of each eye was freely dusted with aristol once daily. The improvement was almost immediate and continued steadily during the time she was under treat-

ment, nearly two months. She left the dispensary with the left eye free from granulations, and only a few in the right eye.

The following example is a somewhat unusual case of phlyctenular disease:

Gertrude W., colored, aged 13, came to the University Hospital Eye Dispensary, with inflammation of the conjunctiva of each eye. Some 4 or 5 mm. from border of each cornea, on the inner as well as the outer side, there are rounded swellings, about 3 mm. in diameter, under the conjunctiva; the base of each is distended, and a vascular band of swollen conjunctiva, resembling pterygium, extends from each swelling toward the canthus. The history contains the fact of retarded menstruation.

The treatment consisted of atropine, with aristol dusted on the conjunctiva, and internally the administration of the tincture of the chloride of iron. Improvement followed at once, and in somewhat less time than two weeks no vestige remained either of phlyctenula or pterygium.

JAMES WALLACE, M.D.,
Chief of the Dispensary for Diseases of the Eye, University Hospital.

LABORATORY NOTES.

PHYSIOLOGICAL.

EXCISION OF PORTIONS OF THE LUNGS OF DOGS.—In view of the universal interest excited in relation to tuberculosis in all its now recognized manifestations by the announcement that Koch's tuberculin acted upon tuberculous tissue, causing its death *in situ*, but not rendering the necrotic tissue innocuous, it occurred to the members of the Stillé Medical Society to undertake the following research:

A certain number of dogs were set aside for experimental research. The general plan of operation first adopted was to resect one or more ribs, draw out and ligate a lobe of the lung, cut off a portion and return the lung into the cavity. A catgut drain was then introduced into the thoracic cavity, and the pleura, intercostal muscles and skin were sutured. Of four animals experimented upon one died upon the table, two on the second day after the operation, and one not until the fifth day. Autopsies showed gangrene of the stump and empyema.

A different operative technique was then adopted. The site of operation, previously selected in accordance with results obtained on the cadaver under forced respirations, was shaved and carefully disinfected. An incision about two inches long was made down to the intercostal muscles, and the tissues were dissected back a short distance on each side. A quick cut, about one and a half inches long, was then made through the intercostal muscles and pleura. Retractors were immediately inserted, and the ribs were drawn apart by an assistant, while the operator thrust in a pair of hæmostatic forceps in the direction previously determined, seized the lobe of the lung, drew it out and transfixed it with a sharp probe. As soon as this was accomplished the retractors were withdrawn, allowing the ribs to close upon the lung tissue, the probe prevent-

ing retraction during inspiration. The external portion of the lung was now removed by a V-incision. A needle, threaded with antiseptic gut, was passed through the intercostal muscle, pleura and tissue of the lung beneath the incision, and out through the pleura and intercostal muscle of the other side. These sutures were repeated about one-eighth of an inch apart until the wound in the thorax was closed, the wound in the lung being closed at the same time. A catgut drain was now laid over the wound, and the edges of the skin were brought together. Owing to the difficulty experienced in controlling the dogs, it was found necessary to dress the wound with a solution of collodion and iodoform in ether upon a matrix of cotton.

By this method three dogs were operated upon with most satisfactory results. During the operation shock was not experienced, and but little hemorrhage occurred. In each case the dogs reacted well. Respirations were at first somewhat rapid, and there was an insignificant rise of temperature during the twenty-four hours following the operation. The appetite was good throughout.

One dog was killed and examined on the tenth day after the operation, the trachea being ligated previous to the opening of the thorax to prevent collapse of the lungs. The lung was found to have healed perfectly to the thoracic wall without the occurrence of circumjacent pleurisy. The pneumothorax had been wholly absorbed and the function of the lung restored.

Three weeks after operation the second dog was killed and the thorax opened under forced respiration. The wound in the lung had healed completely, leaving a small white cicatrix, and the lung itself had become detached from the thoracic wall. The pneumothorax had been wholly absorbed and the function of the lung completely restored. Indeed, the result may be looked upon as a perfect cure. In both instances about 0.5 gram of lung tissue was removed from the lower lobe of the right lung.

From the third dog the whole of the upper lobe of the left lung was removed—a piece about three inches long, and weighing 5 grams. It was necessary in this case to ligate the bronchial artery, but the operation was performed without further complications. The dog recovered promptly and is now living and in excellent condition.

We think that we may fairly consider these results as indicating a thoroughly satisfactory method of excising portions of the lung from dogs. Whether it is equally applicable to human beings, experience alone can demonstrate. Reasoning *a priori* it would seem that this technique might be adopted in surgery, for none of the steps depend upon any anatomical peculiarity of the subject. What result it promises it is, of course, impossible to say, but the beneficial results of operative interference in tubercular peritonitis strongly indicate that much good may come from surgical interference even when such important viscera as the lungs are involved.

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BOOK NOTICES.

HANDBOOK OF THE PRACTICE OF MEDICINE. By FREDERICK TAYLOR, M.D., F.R.C.P. Philadelphia: P. Blakiston, Son & Co., 1890.

This book is well worthy of consultation, both by students and physicians. Theories are largely excluded from its pages, but one finds the necessary points to help in diagnosis and treatment. It is fully abreast of the times.

Among the many sensible suggestions is the author's advice to the friends of fever patients not to increase the intensity of the fever by putting upon the patient excessive clothing in their anxiety to protect him from "catching cold." His remarks on antipyretics are particularly apt, and his caution that pyrexia, except in rare cases, is seldom directly fatal is well worth remembering. The author is, perhaps, mistaken in considering peritonitis the chief danger in enteric fever, certainly it is not the first on the list as a cause of death in this disease. Contrary to most of the text-books in this country, but in accordance with the reviewer's experience, he considers intestinal hemorrhage as a most fatal complication of typhoid fever.

In his chapter on vaccination, the author advises that the operation should be done with human lymph, and does not even mention bovine virus, which is so largely used in this country.

The section on nervous diseases is unusually full for a book of this character; it is well worth study. The chapters on physical examination of the chest and abdomen are good, and, in contrast to many text-books, are so complete that they tend to lead the reader to give more attention to this most important means of diagnosis.

Among the curious arrangements of the subject-matter of the book is the placing of acute rheumatism under the heading of "Diseases of the Organs of Locomotion;" endocarditis, probably the most pathognomonic of the rheumatic lesions, is certainly not a disease of an organ of locomotion.

Now that it seems the fashion to decry the opium treatment of acute peritonitis, it is refreshing to a believer in the efficacy of that treatment to see it mentioned as the only manner of treating peritonitis. The section on renal diseases is especially valuable. The book is completed by a fairly clear section on diseases of the skin.

It is a source of wonder to the reader to see the diseases, diagnosis and treatment so fully described in few words; the author has evidently followed Kingsley's advice—*i. e.*, to avoid using ten words when half the number will suffice.

Essentials of Surgery. By Edward Martin, A.M., M.D. Fourth Edition. Philadelphia: W. B. Saunders, 1891.

It is idle longer to question the utility of outline works. Their production at first was not an experiment, but sprang from the fact that both the student and those most intimately associated with him, the quiz-master and instructor, felt the necessity for a new class of text-books. The needs of the student are peculiar, and differ widely from those of the physician. The indication was clear, and has been met by the publication of the series of "Question-Compends" or "Essentials."

Dr. Martin's very large experience in instructing students has enabled him to appreciate their wants, and an examination of his "Essentials of Surgery" impresses one with the conviction that it has ably fulfilled its purpose. The reception accorded the book has been remarkable, three editions having been exhausted within two years from the date of its publication. The text, following the plan adopted in this series, has been arranged in the form of questions and answers. Dr. Martin's selection of questions has been judicious and practical, and fully covers the subject. The answers are clear and positive, and while concise are yet sufficiently full to be correct and comprehensible. Both the pathology and treatment will be found to coincide with the latest accepted views, and throughout the matter is modern and thoroughly accurate. Numerous woodcuts supplement the descriptions, which add not a little to its value, and enable the student at once to understand points otherwise difficult of elucidation.

The book is so well written, from cover to cover, that it is difficult to particularize; but the section on "Ligation of Arteries" is especially good, containing, in addition to full directions for the operation, the complete surgical anatomy of the part. The chapter on bandaging is profusely illustrated, and will be found invaluable to the student in familiarizing himself with the various roller bandage and handkerchief dressings; it is, in fact, the best that has come under our notice.

This book can be unreservedly recommended to every student of medicine; and we venture the opinion that it would be a useful volume in the office of the practitioner as a work of ready reference. To the present edition an appendix has been added, containing several hundred recipes, which will be found useful in the different surgical affections, and also full instructions for preparing the various materials used in antiseptic surgery, and details for conducting an antiseptic operation.

A Guide to the Practical Examination of Urine. By James Tyson, M.D. Seventh Edition. Philadelphia: P. Blakiston, Son & Co., 1891.

It is almost superfluous to speak of the merits of a work so well known and so often revised as Dr. Tyson's "Practical Examination of Urine." Let it suffice, therefore, to say that not only is the seventh edition in no respect inferior to its predecessor, but where it seemed possible, by alterations and additions, the author has rendered it an even more valuable gift to the medical profession.

Among the new material may be mentioned descriptions of Prof. Walter S. Haines' modification of Fehling's test for sugar by the substitution of glycerine for sodic tartrate, of Dr. Charles W. Purdy's similar substitution in Pavy's ammoniated cupric test, and of Reynold's test for acetone with mercuric oxide. Moore's test for sugar, which was omitted from the sixth edition, in the seventh has been reintroduced for its historical interest. The illustrations have been added to by the introduction of a cut representing crystals of calcium sulphate. The method suggested by Dr. Ralph of applying Lieben's iodoform test of the presence of acetone has been omitted, as being more cumbersome than valuable. The bulk of the volume has been kept within its former limits by also diminishing the size of the type, with which much of the less important matter is printed—some of the minor tests for albumen, the biuret test for peptone, Johnson's test for sugar, the paragraphs upon hemialbumose, lactose and levulose, etc. The precautions to be observed in applying copper tests for glucose have been brought into their deserved greater prominence by increasing the size of their type.

Diseases of the Digestive Organs in Infancy and Childhood. By Louis Starr, M.D. Second Edition. Philadelphia: P. Blakiston, Son & Co., 1891.

The second edition of this valuable work presents some changes from the former one and many additions to it. A section upon the alterations in the odor of the breath in disease, and one upon morbid changes in the composition of the urine, have enlarged the chapter on "The Investigation of Disease." The chapter on the general management of children has been enlarged and improved by the addition of a section upon the care of weak and immature infants, including a description of Tarnier's "Hatching Cradle" and Auvard's modification of it, and of the methods of their use. A chapter on massage in pediatrics is another valuable addition to the original work. One of the most important additions is a full account of second dentition and the alterations in health so frequently induced by it. A frontispiece by the pencil of Prof. Charles B. Nancrede—a colored plate illustrating diagrammatically the course and relations of all the connections of the dental nerve—is an interesting and valuable one of the new features. Several new cuts also have been introduced, making the number now twelve in all.

To admit all this new material without enlarging the bulk of the volume, the size of the type employed has been considerably reduced. The size of the pages, too, has been somewhat cut down, but not proportionately with the size of the print, so that, although the bulk of the volume is less, it contains very few more pages than did the first edition.

Diabetes: Its Causes, Symptoms and Treatment. By Charles W. Purdy, M.D. Philadelphia and London: F. A. Davis, 1891.

The name of Dr. Purdy has been so long connected with the subject of diabetes that one naturally looks forward with pleasurable expectation to a book by him on this subject. It may be truly said that this expectation is not dis-

appointed, for, although the treatise is not an exhaustive one, it is characterized by some new features. The most striking and useful of these is a chapter on the distribution of diabetes. Nothing new of imporiance has been added of late years to the physiology and pathology of disease. Under the subject of symptomatology a convenient test-method for rapidly estimating the quantity of sugar in the urine is given by means of the author's test solution, in which glycerine is substituted for tartrate of potash and ammonia added, as in Dr. Pavy's ammoniated cupric test.

Another new feature, introduced under the head of treatment, is a table giving the amount of sugar in the different wines, in two of which, Budal Imperial and Diatetischer Rothwein wine, Dr. Purdy's analysis finds no sugar. They become, therefore, exceptionally suitable for diabetic patients.

The author's conclusions as to the treatment are those of most physicians who have given thought to this subject, that there are no drugs, except opium, and possibly antipyrine and its class, which have a direct influence in diminishing the quantity of sugar in the urine, and the diatetic treatment is to be preferred to all others. Some valuable illustrative cases are given in conclusion.

Unquestionably the book is a useful addition to the literature of the subject, quite up to the modern standpoint, and one which is further recommended by its convenient size and shape.

Epilepsy: Its Pathology and Treatment. By Hobart Amory Hare, M.D., B.Sc. Philadelphia and London: F. A. Davis, 1890.

This work, which was awarded the four thousand franc prize offered by the Royal Academy of Medicine of Belgium, adds another to the long list of prize-taking books by the same author. It opens with a short historical sketch of the disease, followed by a careful analytical study of its symptoms; a chapter on etiology and pathology follows, and closes the book by a discussion of treatment, including surgical measures, statements as to the number of epileptics proportionately to the general population, complicating diseases, etc.

The author has succeeded admirably in presenting in a short compass the present state of knowledge concerning the disease. We think that he has emphasized rather too strongly the relation existing between night-terrors and epilepsy. Certainly the larger number of children suffering from the former disease escape the latter. Whether fright acting on a perfectly healthy organism can produce epilepsy with organic lesion is, notwithstanding Wood's case, which the author quotes, not proved. The author admits that some slight lesion may have already existed. In speaking of surgical treatment, nothing is said of what Dercum has called "the alterative action of surgical measures." It has happened more than once that operations done for other troubles have been followed by temporary cessation of the fits, and this may account for the relief sometimes given in idiopathic epilepsy by trephining.

Nothing shows so well the excellence of the work as the fact that only very minor points are open to criticism.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND J. HOWE ADAMS, M.D.

Blood Parasites in Tropical Malarial Fever.

Dr. George Dock, of Galveston, Texas (*Fortschritte der Medicin*, March 1, 1891), gives six cases of tropical fever in which the organism of Laveran has been found. These are the first observations of the kind in the South. Case I had Chagres fever in Colon, had taken quinine and been free from fever for two weeks. The blood contained crescents. Case II contracted intermittent fever in Panama, removed to Galveston with anæmia and fever. On the day following a paroxysm the blood contained endoglobular bodies, with and without pigment, and many free pigmented forms with flagellæ. Quinine was exhibited, with the result of causing the pigmented bodies to disappear, though crescents were found at the last examination. Case III was attacked with remittent fever in Nicaragua; six months afterward he came to Galveston with quotidian type of malaria. During an attack of fever the blood contained pigmented bodies in the red corpuscles, and many free round as well as crescent bodies. After quinine, crescents persisted. Case IV was attacked with malignant malarial fever in Nicarauga and removed to Galveston. During an attack of fever the blood contained many pigmented bodies in the red corpuscles and free in the plasma, also some rosette forms. After quinine the bodies rapidly disappeared. Case V contracted fever in Mexico and went to Galveston with tertian intermittent. The blood contained free bodies with flagellæ and crescents. Case VI contracted remittent fever in Tampico. The blood contained free non-pigmented bodies. The author concludes that the malarial diseases of tropical America have the same parasites in the blood as those of other climates, with the same variability in form, number and development and susceptibility to quinine.

A Case of Anthrax Intestinalis in Man.

Goldschmidt (*Münchener med. Wochenschrift*, Feb. 10, 1891) reports a case of anthrax in a brushmaker where infection probably took place from the bristles used by the patient in his work. The disease began with sudden swelling of the submental region, accompanied with fever, chill, headache and wild delirium, followed by hæmatemesis, bloody stools and dyspnœa. Death occurred on the fourth day. The section revealed the serous cavities partially filled with bloody serum, the glands of the neck swollen with hemorrhagic infiltrate, ecchymoses on the pleura of both lungs, the peritoneum, and on the mucous membrane of the stomach and small intestines. The spleen was large and soft, and there was enormous swelling of the mesenteric glands. Microscopic examination of the tissues and fluids showed myriads of anthrax bacilli.

The Germs of Typhoid Fever.

Vaughan (*Canadian Practitioner*, Feb. 16, 1891), in a rather exhaustive article on this subject, concludes "that the belief that typhoid fever is due at all times to one and the same germ, which can be recognized to the exclusion of all others by certain peculiarities in stain-

ing or in the manner of growth, must be abandoned." He believes, however, that there is a family or class of germs, any one of which may cause the essential symptoms and lesions of typhoid fever.

He bases these conclusions on his investigation of drinking water, which was the supposed cause of typhoid fever, from which he separated certain bacilli which differ from Eberth's germ in their mode of staining, growth, and in the fact that they multiply in the lower animals. When these germs are kept at a fever heat for varying times, however, they come to resemble Eberth's germ so closely that it is impossible to distinguish them from that germ which has heretofore been supposed to be the sole cause of typhoid fever.

The Etiology of Diphtheria.

Welch and Abbott (*Bulletin of Johns Hopkins Hospital*, No. 11) have examined the exudations in eight cases of diphtheria, and found the Klebs-Löffler bacillus present in every case. Seven of the cases were pharyngeal diphtheria, and the eighth laryngeal, or the so-called membranous croup. Control experiments were made in several cases, and in none were the Löffler bacilli found. Some of these cases were simple inflammation of the pharynx, and others were cases of follicular tonsilitis. In the latter cases the experiments were of special value, from the difficulty of diagnosis. In one case nearly the whole of one tonsil was covered with a soft, easily removed exudation. The child recovered in three days. One case of diphtheria was examined three weeks after the disappearance of the membrane, and the Löffler bacillus was not found. Membrane from two cases of diphtheria was examined by Gram's method, and showed clumps of the Löffler bacillus.

Examination of bits of membrane have shown that the Löffler bacillus does not invade the mucous membrane, and that they do not even extend through the entire thickness of the exudation. The bacillus has never been found in the internal organs. However, various complications of diphtheria may be due to invasion of other bacteria, notably streptococci, which have been found in the mucous membrane, lymphatic glands and elsewhere. The Löffler bacillus in inoculated animals does not extend into the mucous membrane, and the authors state that Roux and others have demonstrated that the bacilli form extraordinarily poisonous products, which are absorbed from the site of infection, and give rise to the constitutional symptoms and lesions of internal organs. The work of the authors confirms these statements.

They conclude that the Klebs-Löffler bacillus has been clearly proved as the cause of diphtheria, and may be designated the *bacillus diphtheriæ*. Very rarely this bacillus is found in healthy individuals, but the authors see no reason why this bacillus cannot be present in the mouths of certain insusceptible persons without causing diphtheria.

They consider the question, as to whether the disease is originally local or general, settled in favor of the former, and that the grave constitutional symptoms are due to the intoxication with poisonous products. Blood-serum rendered artificially immune against the diphtheritic bacillus has been shown by Fränkel and Behring to destroy the effects of the toxic albumens of diphtheria; this is considered of the utmost practical importance. Prudden has failed to find the Löffler bacillus in twenty-four cases of diphtheria in this country, but the authors conclude this is probably due to the fact that Prudden's cases were not primary diphtheria.

Experiments Regarding Cardiac Asthma.

These experiments by Kauders (*Wiener klin. Wochenschrift*, Feb. 26, 1891) were performed on normally breathing animals in the following manner: One end of a metal catheter was covered with sheet rubber, which could be expanded by forcing liquid in the other end; the closed end was introduced into the heart through the left carotid. The carotid, chest wall and diaphragm were then connected with a registering apparatus. In the first series the obturator was introduced into the aortic orifice and expanded; immediately the blood-pressure fell, the chest was expanded, and rapid respiration occurred.

In the second series the obturator was introduced into the left ventricle and expanded. With the fall of blood-pressure the chest wall rose, and shallow, rapid breathing occurred. If the obturation was continued for some time, the chest movements became almost *nil*, but were interrupted by a deep inspiration, followed again by shallow respiration. That the expansion and rigidity of the lung are not reflex is proved by experiments on animals with severed vagi. Obturation of the *right* ventricle caused fall of blood-pressure and contraction of the thorax. The author concludes that the dyspnœa which follows insufficiency of the left ventricle has definite characters, the expansion of the thorax and sinking of the diaphragm. An important fact observed was the rigidity of the lung itself, which occurred with the shallow respirations which introduced the prodromal stage of the dyspnœa. In the *Zeitschrift f. klin. Med.*, 1890, Kauders and Bettelein, writing on artificially produced mitral insufficiency, conclude, then, that we must regard the dyspnœa of patients afflicted with mitral insufficiency as being due to a kind of emphysema, which, it is said in a very recent case, only manifests itself after exertion.

They finally refer to the fact that an increase in the volume of the lungs has been definitely associated with cases of valvular disease, and refer to a passage in Traube's *Gesammelte Abhandlungen*, vol. iii, p. 276, where he says: "Youthful individuals affected with chronic cardiac disease often manifest an abnormally voluminous and rounded thorax, associated with a considerable increase in the volume of the lungs."

On Pendulum Rhythm and Its Relation to Gallop Rhythm.

Pawnisky (*Deutsche med. Wochenschrift*, 1891, p. 143) describes a certain rhythm of the cardiac beat which he claims to have found: (1) In renal affections of a chronic character; (2) in cases of arterio-sclerosis and heart hypertrophy; (3) in certain cases of phthisis.

As regards its occurrence in Bright's disease, the author states that he has never found it in those cases where cirrhosis of the kidney has advanced to a marked degree, and where there is associated with this condition a very marked cardiac hypertrophy. In all of his observations either no increase in the dulness could be made out at all, or it was slight; or, when hypertrophy existed, dilatation predominated.

In arterio-sclerosis the phenomenon is not as frequently observed, and in the higher grades of hypertrophy is absent. Under this heading are included those cases in which we meet with increased arterial tension in the absence of an arterio-sclerosis.

As regards phthisis, Pawnisky states that the phenomenon is observed in those cases where the tuberculous infiltration has attacked the anterior portion of the left lung, and where the heart is surrounded on its upper and left surface by an indurated mass.

In general it may be said that pendulum rhythm is associated with increased arterial tension, with increased power of the heart's action, and a pulse rate which is rather increased than diminished in frequency. It is characterized by the separation of the first from the second sound by as great an interval as exists between the second and the following first sound. It is due to a lengthening of second phase of systole, that is, the time elapsing between the opening and closing of the aortic valves, which, in turn, is due to the increased resistance offered by the systemic arterial system to the heart.

As regards the relation existing between this form of pendulum rhythm and embryocardia, the former is associated with increase in cardiac power, loud sounds, increase in arterial pressure, while the latter is found in exactly the opposite condition; and while this, of course, is of grave prognostic significance, we may conclude, from the existence of the former, that the heart is able to do its work effectually.

This pendulum rhythm, finally, is the precursor, as regards time, of gallop rhythm, because he found the former to be followed by the latter when he caused his patients to exert themselves in some way or other. In addition, he found gallop rhythm to pass into pendulum rhythm after the administration of digitalis, which, in turn, was at times followed by the normal rhythm. The appearance of the third additional beat in gallop rhythm he explains by an ineffectual attempt on the part of the heart at systole, the aortic valves only opening at the second attempt, and the additional sound then, according to him, is systolic in time,

and not diastolic, as supposed by Fraenkel. Gallop rhythm, on the whole, he does not regard as pointing to an especially unfavorable prognosis, merely indicating an increase in arterial resistance; still, he thinks pendulum rhythm a more favorable sign than gallop rhythm.

The Practical Value of the Alpha-Naphthol Test for Sugar.

Posner and Epenstein (*Berlin. klin. Wochenschrift*, Feb. 23, 1891), reviewing the details of this test, consider it to be free from many of the objections raised against other tests for sugar. It depends upon the fact that a solution of sugar, in the presence of pure concentrated sulphuric acid and a solution of alpha-naphthol, gives a violet-colored reaction, due, according to Udransky, to the separation of furfurol. This reaction occurs not only with sugars but with all carbohydrates and certain albuminoids; hence, the urine must be free from albumen. The test is extremely sensitive, showing one-hundredth of one per cent. of sugar. The reagents and glasses must be chemically clean. It was noted that normal urine, *i. e.*, urine which showed no presence of sugar by any of the accepted tests, gave with this test the reaction of such intensity as to indicate the presence of two-hundredths of one per cent. of sugar. The authors do not discuss the cause of this occurrence, deeming it sufficient to state that if the urine is diluted at least twenty times, this reaction is not obtained in normal urine. Hence, in practice the urine must always be previously diluted. The quantitive analysis for sugar by this method does not give perfectly accurate results in the decimal figures of the percentage. The authors conclude that the test is a valuable addition to practical medicine.

The Treatment of Diabetes Mellitus with Syzygium Jambolanum.

Lewaschew (*Berlin. klin. Wochenschrift*, Feb. 23, 1891) reports two cases of this disease, in which syzygium jambolanum was tried; the results in both were so similar that he gives the details of only one case. A patient, 62 years of age, with well-developed symptoms of diabetes mellitus of five years' standing, was given in powder form a drachm of a preparation of the seed. Subsequently the drug was given in the form of a fluid extract; but after a trial the medication was suspended as no improvement in the symptoms was noticed. Later the drug was again administered in a much larger dose, beginning with five drachms of the seed, in powder form, daily. This time immediate and considerable success was obtained. Under this treatment, continued for a considerable time, the dose being still further increased to over six drachms, there is no doubt that the drug had an efficient influence over the symptoms of the disease, and produced a general improvement. The body weight increased; there was marked reduction in the quantity of urine and sugar passed; the great thirst and hunger became less troublesome, and the condition of depression and weakness was greatly relieved. There was not observed a complete disappearance of the sugar from the urine in any case under treatment. Lewaschew believes that failure to get success with this drug is due to its administration in too small doses; possibly further research will show more definite results than those reported at present.

The Therapy of Diphtheria.

Loeffler (*Deutsche med. Wochenschrift*, March 5, 1891) reviews the vast number of drugs used in this disease. He reduces the question of the cure of diphtheria to the basis of the consideration of the cause. In the *bacillus diphtheriæ*, he believes, exists the etiological factor. He considers the prevention of the lodgment of the bacillus in sound mucous membranes, or their destruction before they can develop. The drugs which are to do this must be those which are the quickest and safest in action, allowing no spread of the disease to sound parts or to other persons. He prepared a solution of blood serum for the development of the bacillus. The bacilli were treated with different antiseptic solutions for periods not longer than thirty seconds; the author regarding this as the longest time that a continuous application could be made to the throat.

Many drugs were used in different strengths, from a consideration of which he comes to the conclusion that the bichloride of mercury in one to a thousand solution, carbolic acid in three per cent. solution in thirty per cent. alcohol, and equal parts of alcohol and oil of turpentine with two per cent. of carbolic acid, are superior to all others. These preparations should be used as a gargle every three or four hours. No signs of poisoning have been observed in the patients in whom these solutions were used; their efficiency is in the order given above. Painting the throat with a five per cent. solution of carbolic acid, two per cent. solution of bromine, or one per cent. solution of chlorine can be used. Prophylaxis for healthy persons consists in the use of gargles every three or four hours. Sublimate solution in the strength of one to ten thousand is excellent, or the cyanide of silver, one to eight thousand, is perhaps better, because it is less likely to leave a metallic taste in the mouth. Water containing chloroform or chlorine, one part in eleven hundred parts of water, or thymol, one part in five hundred, can be used. The gargling must be done every three or four hours, as it was determined that a residence of eight hours' duration in the blood serum is sufficient to develop the bacilli.

Formula for Hyperemesis.

Kaatzer (*Deutsche med. Wochenschrift*, Jan. 15, 1891, and *Semaine méd.*, 1891, No. 1) saw in a case of hyperemesis in a pregnant consumptive quick and permanent success following the use of the following prescription:

℞ Creosote . . . . . 30 minims.
Tincture of gentian . . . . . 2½ drachms.
Extract of coffee (German Pharm.) . . . . 2½ drachms.
Brandy . . . . . 1 ounce.
Distilled water . . . . . 3½ ounces.

Shake well and take a tablespoonful in milk, two or three times a day.

The Origin and Nature of the Non-Specific Micro-Organisms of Suppurative Hepatitis.

Bertrand (*Gazette Hebdom. de Méd. et Chirurg.*, Jan. 24, 1891) recognizes the fact that when bacteriology proved suppuration to be a process produced by micro-organisms, the study of hepatic abscess-formation was reduced to two elementary questions, namely, to prove the presence of pyogenic microbes in the hepatic abscess, and to determine in what way they enter the liver.

The study of pathological anatomy proves the most profitable field for investigation. The connection between dysentery and hepatic abscess has been pointed out; the staphylococcus pyogenes has been isolated in the pus of liver abscess, cultivated and obtained in a pure state; this same culture has been obtained in dysenteric cases. Bertrand believes that the ptomaines produced by these organisms are also agents in the process. This same micro-organism has been isolated from the furuncle and, by Pasteur, from the marrow of inflamed bone; hence this latter observer has termed osteo-myelitis "the furuncle of bone marrow." Bertrand suggests that dysentery in analogy might be called furunclosis of the intestines. Souques obtained these staphylococci from the liver of a case of multiple hepatic abscess occurring consecutively to ulcerative typhlitis. Kartuli, one of the original observers in this field, believes that the additional presence of amœba coli in hepatic abscesses, associated with dysentery, serves to distinguish this form from the so-called idiopathic hepatic abscess.

SURGERY.

UNDER THE CHARGE OF

D. HAYES AGNEW, M.D., LL.D., AND J. WILLIAM WHITE, M.D.

ASSISTED BY

G. G. DAVIS, M.D., M.R.C.S., AND THOMAS R. NEILSON, M.D.

The Treatment of White Swellings.

Under this title, Lucas-Championnière has written (*Journal de Médecine et de Chirurgie*, Nov. 25, 1890) a very interesting paper, giving his views, based on a wide experience, as to the treatment of this variety of tubercular disease. He considers that the methods of treatment have been much modified by modern improvements, both as to therapeutic and operative measures. Topical treatment he regards as particularly happy in children, upon the development of whose bones operative interference exercises a disastrous influence. Immobilization he has found not to possess the beneficial influence generally attributed to it, and he thinks that while there are a certain number of cases in which it ought to be employed, it is, as a rule, abused. Its principal object should be to prevent deformity.

Care of the general health plays a principal part in the treatment, and the value of country or sea air must not be overlooked. As to the medicines to be relied upon, the iodide of potassium is mentioned as *the* one *par excellence*, while tonics, cod liver oil, quinine and arsenic are also useful. Iron is not spoken of with favor, and the iodide of iron does not, according to the writer, possess the virtues of iodide of potassium.

As to the direct treatment of the affected joint, revulsion, by means of the thermocautery, superficially applied, is considered a measure of the greatest value. The cauterizations are repeated about every fortnight, and are made to extend beyond the limits of the joint. Next to cauterization in importance, compression is mentioned. This is to be effected by means of flannel bandages firmly applied, and renewed as often as they become loose. Before the bandage is applied, the joint is first enveloped in a layer of either peat wadding (which has been found to best answer the purpose), oakum, tow, or wool, all of which are superior to cotton.

Of topical applications, mercury is considered the best, the use of iodine or turpentine being characterized as a mistake. The mercury is employed in the form of cerate, made according to an old formula of Scott, of Dublin, which is as follows: Soap cerate, one ounce; double mercurial ointment, one ounce; powdered camphor, one drachm. Championnière regards mercury as the principal source of success in the treatment, the absorption of the drug into the tissues of the part making possible its microbicidal action. Previous to the application of the cerate the skin is thoroughly cleansed and then rubbed with camphorated spirit.

After the dressing is made, if fixation is required, it is accomplished by means of a plaster bandage. If abscesses form in the course of the disease, they are not interfered with unless large, in which case they are opened under anæsthesia and washed out with a 5 to 8 per cent. solution of chloride of zinc. Sinuses are injected with the same solution, sometimes with an emulsion of iodoform, and, as a substitute for the latter, naphthol-camphor is mentioned.

Continuous extension is regarded as most serviceable in the case of hip disease, and is employed, not only because of the relief of pain which it secures, but because it promotes the conditions which favor the possibility of cure.

As to operative treatment, when necessary, the view is taken that it should be complete. Arthrectomy is considered as hazardous and incomplete, while resection is spoken of as "the only and true operation for articular and osseous tuberculosis."

The paper concludes with an epitome of eighty-one resections, the results of the operations upon the knee-joint being particularly excellent. In no less than forty excisions of

this joint cure was effected without the occurrence of any suppuration whatever. Antisepsis was rigidly carried out, and in order to prevent injury to the silver wire employed to appose the ends of the femur and the tibia, carbolic acid solutions were substituted for those of bichloride generally used.

The Treatment of Angular Deformity of the Femur Following Fracture in Its Upper Third.

Lorenz contributes an elaborate and interesting article on the above subject to the *Wien. med. Wochenschrift*, Jan. 3, 1891, and Jan. 10, 1891.

He describes a case, aged 10 years, who, at the age of 4½ years, while in the arms of his nurse, fell forward and sustained a fracture of the left femur. The child at this time was undoubtedly affected with rickets. Under treatment the fracture united in six weeks, the limb being apparently straight. In eight weeks, on commencing to walk, limping and shortening were observed. A year and a half later Gussenbauer advised the performance of osteoclasis in order to remedy the existing deformity. This Smoley did quite readily without resorting to instrumental aid. The limb was then encased in a plaster of Paris bandage for twelve weeks, and for four months longer the child was kept off its feet. The result appeared to be excellent, the limb being straight. In about a year, however, the deformity began to reappear, and a year later osteoclasis was, for the second time, performed. This time it was found impossible to correct the existing deformity perfectly. The limb was kept in a plaster bandage for three months. After this the deformity reappeared once more. The shortening increased to two and a half inches, and the patient could scarcely walk at all, notwithstanding he had a thick sole on the foot of the injured side. He was then brought to Vienna.

On examination he was found to present still some evidences of rickets. The deformity of the thigh was almost a right angle, the apex being four inches below the trochanter. The hip joint was movable. The upper fragment was slightly flexed, and rotated outward to its greatest extent, the upper edge of the trochanter was in contact with the ilium and gliding upon it. The lower fragment was in the line of the body, but so rotated outward as to make the internal condyle point directly forward. There was also lumbar scoliosis, the convexity of the curve being on the injured side.

As stated, there were two and a half inches of shortening; the patient could only progress slowly and with great difficulty, notwithstanding the use of two canes, and he complained greatly of pain in the hip.

Operation.—The attachments of the sartorius, tensor of the fascia lata and rectus cruralis were divided by the open method, and the adductors were freed subcutaneously as much as possible. The point of union of the fragments was then exposed, and the bone was chiselled through. It was found to be soft and brittle. The angle was straightened considerably, but not completely, until the insertion of the adductors was still more freely divided. By this means it was possible to bring the ends of the bone in apposition without resection. It was impossible to overcome the action of the gluteal muscles and rotate the upper fragment inward.

The wounds were closed with catgut and dressed antiseptically. A plaster of Paris case was then applied, extending to the armpit, the leg being rotated outward and placed in a position of extreme abduction. The healing of the wound progressed favorably, there being no fever. The dressing was changed in four weeks and the union found to be firm. The plaster dressing was reapplied and the limb was allowed to remain in its abducted position.

Five months later, the bones being firmly united, the leg, by the use of a small amount of force, was brought straight, and a perineal crutch was ordered to be worn, with a band for the fractured thigh. One year after the operation the shortening was only four-fifths of an inch, and the cure was complete.

Mercurial Stomatitis.

Fournier, in his clinical lecture on this subject (*L'Union Médicale*, Feb. 3, 1891), alludes to the fact that the older writers frequently mention this affection as causing deep, even phagedenic ulcerations which, on healing, bound the jaws firmly together. Abundant hemorrhage accompanied these ulcerations. The teeth were lost and necrosis occurred, even death from exhaustion sometimes following. We do not see such cases now because we do not believe that the germs of the disease are voided by the salivation produced. Formerly inunctions were much used.

When mercury is given by the mouth, stomatitis is slow to begin and is progressive; it announces its advent by mild symptoms; it does not progress beyond a medium degree of intensity. Stomatitis from inunctions is exactly the opposite: its invasion is sudden; it affects the whole mouth simultaneously; it is very severe.

There are two theories in regard to salivation: one regards it as an inflammation of the salivary glands, the secretion from these irritating the mouth; the other holds that the mercury irritates the mouth and provokes the salivation. Nearly every one believes now that the stomatitis is primary and the salivation secondary. A third theory ascribes the cause to a microbe.

To avoid salivation, be sure that the mouth and teeth are in a healthy state; caution patient to watch for symptoms; keep the mouth clean with a wash of chlorate of potash, and brush the teeth with equal parts of charcoal and cinchona; or cinchona and tannin, with essence of mint to flavor; watch the mouth for any indication of the drug's action; stop the treatment at the first alarm.

When salivation has occurred, touch the eroded points with a crayon of nitrate of silver and order mouth washes of marshmallow and chlorate of potash or alum, 2 to 2½ per cent. Chlorate of potash may also be given internally. In severe cases chlorate of potash, one and a half to three drachms per day, in sweetened water or gum syrup, will, in a few days, produce a calming effect. During the acute period irrigate with marshmallow solution, milk or plain water. Later on potash or boric acid washes may be tried and the gums may be painted with cocaine. Light superficial cauterizations may be made over small areas. Sedatives like opium will also be useful in the course of the affection.

Pruritus Hiemalis, Winter Itch, Frost Itch, etc.

Corlett describes three cases of this affection in the *Journal of Cutaneous and Genito-Urinary Diseases*, Feb., 1891.

The affection was first pointed out by our esteemed countryman, Louis A. Duhring. A year later Jonathan Hutchinson also described a "winter itch." In a recent work Dr. Payne describes a "frost itch." It is usually considered a rare disease, but the author has found it on the southern border of Lake Erie, a well-defined and not uncommon affection. He reports three cases. The first occurred in a man, aged 35, a victim of lumbago; he itched each winter. At the age of 14 he had a severe attack of pustular eczema. At 15 the present trouble commenced. For the next seven years he also had acne. The itch returned with the first appearance of frost, and lasted till the approach of spring. In mild winters the itching was less, but in a severe cold all parts of the body that came in contact with the clothing were affected. The face, neck and hands were exempt, also the axillæ, folds of the nates, genitals, etc. While in the South he did not have it; it was less severe in England, and disappeared entirely in France, Switzerland, Italy, Austria and Germany.

The second case, aged 39, suffered from this affection for three years. In this case the disease had the appearance at times of the form of urticarious placques, confined to the extremities.

As regards the etiology of winter itch, some maintain, with Dr. Tilbury Fox, that it is due to internal causes. Diakonoff says that it is due to an irritation of the cutaneous sensory nerves. Another cause given is exposure to severe cold after exercise.

It may be confidently said that the general health has no effect on the pruritus. Irritation by the clothing may aggravate but cannot produce the malady. Meteorological conditions appear to be the main factor. It is not infrequently associated with other neuroses.

The treatment is largely palliative. Internal medication seems to have little effect. Ichthyol may be tried. Of local measures the following seem to have been the most beneficial:

℞. Resorcin . . . . . 1 drachm.
Glycerin . . . . . 2 drachms.
Water . . . . . 4 ounces.
Mix. Apply locally.

℞. Menthol . . . . . 192 grains.
Glycerin . . . . . 2 drachms.
Water . . . . . 4 ounces.
Mix. Apply locally.

℞. Sulphacalbyolate of ammonium . . . . . 192 grains.
Glycerin . . . . . 2 drachms.
Alcohol . . . . . } of each enough to make 4 ounces.
Water . . . . . }
Mix. Apply locally.

EXPERIMENTAL INVESTIGATIONS ON THE OCCURRENCE OF ADHESIONS IN THE ABDOMINAL CAVITY AFTER LAPAROTOMY.

An unfortunate but frequent sequel of laparotomy consists in the formation of adhesions, especially between the intestines and the abdominal wound. This fact is confirmed, says THOMSON (*Centralblatt f. Gynäkologie*, Jan. 31, 1891), by Martin, Olshausen, Gusserow and other operators, by the observations made in repeated laparotomies in the same individual. In order to throw light upon the question, many experiments upon animals have been made by Säuger, Dembowski, Kelterborn, Forscher and others, but the varying results obtained led Thomson to study the subject afresh. At first he hoped to find the solution of the problem in the observance of rigid antisepsis or asepsis; but although Rein has shown, by recent bacteriological experiments, the authority for asepsis in laparotomy, and Sapeschko has laid stress on the perfect preparation of the operating room, Fritsch's experience, that in fifty-two instances in which asepsis was carefully carried out, two deaths occurred, one from ileus resulting from adhesions, showed that the formation of the latter was not to be so excluded.

Thomson began his investigations with the simple incision in the linea alba, with antiseptic precautions, wiping the wound with sterile gauze moistened with a 1–1000 bichloride solution, placing the instruments in a two per cent. carbolic acid solution, and taking the silk for the sutures directly from a four per cent. solution. In a rabbit so operated upon he found, through examination eight days afterward, two coils of intestines adherent to the wound. He obtained similar results when he operated with complete asepsis, employing a sterilized salt solution after Fritsch, and preparing the instruments and silk by boiling in water. The question remained to be decided whether infection of the wound took place from the atmosphere of the operating-room. Three rabbits operated upon in a room where experiments and sections of animals were made, died in one day of peritonitis, and in one cat which survived there were afterward found extensive omental adhesions to the abdominal wound.

His next experiments were conducted in a perfectly sterile atmosphere, in a room especially adapted to the purpose. Sterilization of the hands of the operator and of the field of operation were effected in the customary manner, and the silk and instruments were boiled immediately before use. The wounds, when no bleeding occurred, were not wiped off at all, and when hemorrhage did occur, were touched with sterilized gauze. Under these conditions a number of laparotomies were performed upon rabbits and cats. In the former, in addition to an incision in the linea alba, wounds were made on each side through the ab-

dominal wall and the peritoneum, all being closed again with silk sutures. Sections, eight days later, showed intestinal adhesions to all of the wounds. In the cats the abdominal cavity was opened in the middle line, and on one side an incision was made into the peritoneum, while on the other a small piece of peritoneum was removed. The wounds were closed, as before, with silk sutures. Examination at the end of a week demonstrated omental adhesions to the two wounds, but none to the place from which the piece of peritoneum had been removed. Thomson explains the regular adhesion of the omentum in cats by calling attention to the fact that it is of sufficient length to completely cover the small intestine. From these experiments, he says, it would seem that we are powerless to prevent, even in the simplest laparotomy, the formation of omental or intestinal adhesions. Whether the wound be made in the median line or more to the side of the abdomen seems to be in this respect a matter of indifference.

In regard to the effect of sterile foreign bodies in the abdominal cavity, he states that he has found, after many observations in animals, that silk ligatures almost always are encapsulated or are absorbed without the formation of adhesions; but when a larger foreign body, a piece of sterile gauze the size of a bean, for instance, was attached to the parietal wall, he found that adhesions would be formed.

That the danger of the intestines becoming adherent to themselves in aseptically performed laparotomies is of little moment, is shown by experiments made by mopping out the abdominal cavity with a compress of sublimate cotton, and in other cases by cleansing it with a sterilized salt solution.

From his investigations, Thomson draws the following conclusions:

(1) Omental and intestinal adhesions form with laparotomy wounds, as well as with wounds through the muscles of the anterior abdominal wall, without infection. An exact approximation of the wound with silk best prevents extensive adhesion.

(2) Superficial peritoneal lesions heal without any consequences.

(3) Before closing the abdominal wound, the omentum should be spread out behind it, in order to prevent the intestine from becoming adherent.

(4) Sterile foreign bodies, if they create a certain amount of irritation, cause the formation of adhesions in the peritoneal cavity.

A Record of the Results of Five Hundred and Twelve Cases of Intubation of the Larynx.

Bleyer has embodied in an interesting paper, which appears in the *Archives of Pediatrics* for March, 1891, his observations made in an experience covering the above number of cases of intubation. In order to show that the operation has now attained a position which entitles it to recognition as a feasible and practical surgical procedure, he compares its results with those of tracheotomy. Of the 512 cases in which he performed intubation, thirty-seven per cent. recovered, while the most complete statistics of tracheotomy, those of Lovett, show the proportion of recoveries from that operation to be twenty-eight per cent. With regard to the details of the operation of intubation, Bleyer insists upon the necessity of a preliminary laryngoscopic examination, the performance of which will be facilitated, when the patient offers resistance, by the employment of a gag and tongue-tractor of his own device. The examination is of value, not only because it will reveal the nature of the affection for which the intubation is contemplated, but because, in cases of diphtheria or of croup, it will permit the operator to see and remove any loose membrane which might be pushed downward by the tube—a complication which the writer regards as the rule rather than the exception.

The matter of the selection of the size of the tube to be employed in a given case is one which requires some experience. It must be remembered that the size of the larynx varies considerably in different children of the same age.

Daily removal of the tube for the purpose of cleansing it from accumulated loose membranes and secretions was practised in many of the writer's later cases. He prefers that

it should be accomplished by means of the two forefingers rather than the forceps. In a large number of the cases he found that the tube could be dispensed with after the second, third or fourth day. In a few cases its re-introduction was necessary.

By way of local treatment, irrigation of the nostrils with a solution of peroxide of hydrogen, one part to two of water, is recommended, a soft rubber catheter being used for the purpose. After the nares have thus been thoroughly cleansed, the pharynx and larynx are to be irrigated with a 1–8 solution of the peroxide of hydrogen, the patient's head being held forward over a basin in order to facilitate the escape of the fluid. These cleansing applications should be made every two hours. At the times of removal of the tube irrigation with a solution of bicarbonate of sodium, half an ounce to fourteen ounces of luke-warm water, is advised.

As to medicinal treatment, Bleyer speaks favorably of his experience with calomel, given in half-grain doses every hour. In the administration of food the stomach tube was, for the most part, employed. A source of danger, which is to be kept in sight in these cases, is an inordinate desire for fluids, the result, not of actual thirst, but of uncomfortable sensations caused by the presence of the tube. In five cases, through the too frequent administration of liquids in response to the patient's appeals, death took place in consequence of mechanical obstruction of the heart from distension of the stomach.

As sequelæ of intubation, ulceration from pressure of the tube and alterations in speech are mentioned, the former having been met with in almost one per cent. of the cases; the latter may vary from partial to complete aphonia, but is always amenable to treatment. From a tabular statement of the results of the 512 cases it appears that of the patients under 3 years of age, 73 recovered and 197 died; while of those over 3 years old, 115 recovered and 125 died. The chief causes were extension of the membrane to the bronchi, bronchitis, pneumonia, sepsis and exhaustion.

In conclusion, the writer points out the advantage of intubation by means of a rubber catheter and the intubation tube over tracheotomy, in connection with operations upon the mouth or throat, when much hemorrhage is anticipated.

Tracheotomy versus Intubation.

From the standpoint of a general practitioner, W. H. Whyte (*North American Practitioner*, March, 1891) compares the merits of these two operations. He does not believe that the hope has been fulfilled that intubation would, on account of its simplicity and the avoidance of the use of the knife, commend itself to the laity and add materially to the resources of the profession.

The operation, as well as the removal and replacement of the tube, which have to be done often, from three to six times in as many days, requires a degree of manual dexterity which the average physician, who has the opportunity to practise the manipulations but once or twice yearly, is not apt to acquire. Another serious objection is that the patient is subjected to a certain amount of exhaustion, which in diphtheria is, above all things, to be avoided. He thinks that one cause of death after intubation has not been given sufficient prominence—namely, pneumonia resulting from the entrance of liquids into the air passages.

He considers that the great advantage which tracheotomy possesses over intubation is that the surgeon or nurse can easily remove and replace the tube, as often as necessary, without pain or discomfort to the patient. Although the percentage of recoveries after tracheotomy is not encouraging, he is of the opinion that there would be a better showing if country surgeons would perform the operation more frequently, the children met with in their practice being favorable subjects for operation because they are generally well nourished and free from the usual constitutional taints frequently met with in those seen in city or hospital practice. In spite of the fact that tracheotomy is regarded as one of the most difficult of surgical operations, he thinks that any country practitioner, with some surgical experience and a cool head, can perform it.

A New Appliance for the Treatment of Fracture of the Clavicle.

W. H. Curtis (*North American Practitioner*, March, 1891) describes an apparatus which he has devised for the purpose of preventing the falling downward and forward of the shoulder, with consequent displacement of the fragments in fracture of the clavicle, and which, after a year's experience in its use, he finds to meet the indication better than any other form of dressing, and with the minimum of discomfort to the patient.

It consists of a wooden or metallic crutch head, long enough to pass well up in front of the shoulder, supported by an extension rod, which is connected by a pivot joint to a metallic plate on a waistband. Proper elevation of the shoulder is secured by the adjustment of the extension rod, and a suspensory strap passing over the sound shoulder, while the shoulder is held back by a strap passing around the sound shoulder, acting in conjunction with the crutch head. He claims that the apparatus is easy of application, can be worn either under or over the clothing, is well tolerated by children, and permits of early limited motion of the arm.

The Operative Treatment of Congenital Dislocation of the Hip.

Schüssler has contributed (*Centralblatt f. Chirurgie*, Jan. 17, 1891) the report of a case upon which he operated with excellent success for the relief of this variety of deformity. The patient was a girl, 14 years old, and the indication for operation consisted in a high degree of adduction of the dislocated thigh. In order to bring the limb into position the operator removed from the neck of the femur a wedge-shaped piece, with its base directed backward, and chiselled out a new articulating cavity for the head of the bone. The result, both as to the appearance and function of the limb, was capital, the patient, upon a recent examination, six years after operation, showing free motion of the joint, and being able to go for hours without support of any kind, and dancing without difficulty.

Schüssler says that it is more than probable that in all cases of congenital dislocation of the hip, in which a pronounced position of adduction has existed for a long time, it will be found that the head of the femur is much altered in shape, the side which rests against the pelvis being flattened from pressure, the outline being oval lengthwise, and the cross-section being triangular instead of circular. The relation of the head with the neck of the bone is changed, and, therefore, to effect permanent correction, the mere separation of the head from its abnormal position, and placing it in an already existing or artificially made acetabulum, as Heusner, Hoffa, and Lücke have done, will not be sufficient. Heusner and Lücke have both had cases in which the deformity returned after their method of operating.

Schüssler considers that the removal from the neck of the femur of a wedge-shaped piece, the base being fully on ecm. in width, and directed backward, is essential to permanent success. In a given case, when operation is decided upon, the surgeon must adapt his plan of procedure to the peculiarities met with, and should not observe too rigidly the principle of sparing the skeleton as much as possible.

Remarks on Five Hundred Cases of Stricture of the Urethra.

Desnos (*Annales des Maladies des Organes Génito-Urinaires*, Jan., 1891) records his observations upon the etiology and treatment of stricture of the urethra, derived from 500 cases.

In the immense majority of the cases the strictures were of gonorrhœal origin; in two instances they were caused by the cicatrization of urethral chancres; and four cases resulted from traumatism, such as falls and kicks. He draws attention to what he calls "slight traumatism of the canal," which sometimes takes place during coitus, and sometimes follows a prolonged erection during the course of an attack of gonorrhœa. He believes that these little ruptures of the mucous membrane are more frequent than one would suppose, and that they play a considerable part in the genesis of stricture.

His experience goes to show that gonorrhœal strictures are of slow development, having never seen one in which a year and a half, at least, had not elapsed since the beginning of

the urethritis. A traumatism, on the contrary, whether slight or extensive, leads to the rapid formation of a contraction.

He points out as a remarkable fact the degree to which a stricture may attain before the patient experiences functional troubles. Many patients do not seek relief for difficulties of micturition, but for such complications as cystitis, fever, digestive disturbances, etc.

As to the locality of the strictures, an analysis of the cases showed that in almost all the constriction was in the bulbous portion of the urethra. In nearly one-half of the cases the strictures were multiple, the tightest ones being in the bulbous region. He never met with an instance in which the stricture was impassable, but always, even in the most difficult cases, after patient and repeated efforts, has succeeded in passing a bent filiform bougie.

The methods of treatment employed by him, and the number of cases treated by each, were:

	Cases.	Deaths.
Gradual dilatation	387	1
Internal urethrotomy	78	0
External urethrotomy	3	1
Electrolysis	32	0
	500	2

With regard to gradual dilatation, he insists upon the necessity of proceeding with extreme slowness and patience, avoiding all violence, rapidity of movement, and pressure, however slight. Of the employment of cocaine in the urethra, he says that he rarely uses it. Outside of the dangers inherent to the drug, he has found a disadvantage in the fact that the cocainized urethra offers a certain degree of resistance to the passage of sounds. He insists in a most positive manner upon the association of antiseptic and aseptic measures with the instrumental treatment of the urethra, cleansing the external parts with a boric acid solution, and irrigating the urethra with it as well. The instruments to be employed should be sterilized. To the patient he administers salol or biborate of sodium. His experience goes to prove the value of these precautions, since he met with urethral fever in but two per cent. of his dilatations.

As to the question whether dilatation really leads to the cure of stricture, the writer is unable to adduce a sufficient number of facts, less than one-half of his patients having remained long enough under observation.

Passing on to the operation of internal urethrotomy, Desnos expresses his preference for the Maissoneuve urethrotome, having employed it in all but two of his seventy-eight cases. He uses a small blade, and thinks that a division of the stricture to a calibre of twenty-one or twenty-three is quite sufficient. He thinks that when it can be easily introduced, a catheter should be left in the bladder after the operation, for the purpose of preventing contact of the urine with the wound; but when difficulty is met with, he believes that the attempts to pass the catheter will be of more serious import than the omission of its use.

External urethrotomy he regards as an operation required only in exceptional cases. Of the three patients upon whom he performed it one had multiple perineal fistulæ, another had a calculus impacted behind a tight stricture, and the third suffered from stricture resulting from rupture of the urethra.

Desnos's conclusions as to the several methods of treatment show that he strongly favors gradual dilatation as being applicable to the greatest number of strictures. He calls attention to the advantage which it possesses of not confining the patient to bed, and its freedom from serious risks, and believes that it should undoubtedly be employed if the dilatation progresses regularly, and no complication arises. If, during the course of treatment, cystitis, prostatitis, fever, or hemorrhage, should be met with; or if, after dilatation, the contraction speedily returns, the operation of internal urethrotomy is indicated. He is of the opinion that the final results of the operation will advantageously bear comparison with any other mode of treatment.

The Magnetic Needle as a Diagnostic Agent in Surgery.

Sachs (*Deutsch. med. Wochenschrift*, Feb. 5, 1891) discusses the use of the magnetic needle as a means of locating foreign bodies in the tissues. The method employed was to pass an electro-magnetic current through the part and thus magnetize the foreign body. Instead of using the electro-magnet, a large horse-shoe magnet, capable of sustaining five or six pounds, may be employed. Such a one was used in these cases, and found satisfactory. The current having been passed through the tissues the part was brought near to a magnetic needle, or the needle of a galvanometer, and by its deflection the situation of the foreign body was announced.

Deflections of the needle occurred when the body was from four and three-quarters to eight inches distant. The smaller the foreign body the more it must be magnetized. In that case an electro-magnet is preferable to the horse-shoe magnet. The magnetic needle used was composed of two needles 2.7 in. long, placed 1.2 in. apart. These were fastened in a cork and suspended by a silk thread, or, in some cases, floated on the surface of water.

Nine cases are described illustrating the use of this appliance. The article closes with an appeal for its more general employment.

Chronic Blennorrhagic Inflammation of the Tunica Vaginalis Testis.

M. Regnault (*Annales des Maladies des Organes Génito-Urinaire*, Feb., 1891) describes the above affection. In thirty-nine autopsies he found fifteen cases of chronic inflammation of the tunica vaginalis. The lesions appeared as adhesions of the two surfaces, of greater or less extent.

The vaginal sac may be obliterated wholly or in part. There may also be adhesions by bands. These latter pass from the parietal to the visceral layers, and vary in size and length. They are less frequent at the head than the tail of the epididymis. Ordinarily there is no fluid present, but exceptionally one finds cartilaginous bodies or small cysts. The tunica vaginalis is sometimes found thickened. The tail of the epididymis may be sclerosed, as Panas has shown to be the case in hydrocele.

The affection is not caused by age, or often by injuries, but mostly by gonorrhœa. Out of nine autopsies of cases that had previously had gonorrhœa, six were found to have evidences of old inflammation of the tunica vaginalis. Of twelve who denied having had gonorrhœa only two were affected.

It is rarely possible to make a diagnosis during life. One is justified, however, in making the diagnosis when a patient affected with gonorrhœa complains of testicular pains and one finds a depression such as would be made by a constricting band. This is only found in about one in twenty cases in life.

Resection of the Stomach.

Porges (*Wiener klin. Wochenschrift*, Feb. 12, 1891) showed, from the clinic of Prof. Maydl, a man who had a large portion of his stomach removed for carcinoma of the greater curvature. He had been emaciating for a year, and a tumor the size of a fist was felt in the gastric region. Other symptoms were mostly wanting. Under chloroform, a transverse incision, nearly eight inches long, was made two fingers' breadth beneath the processus xiphoideus from the middle of the right rectus abdominis to the left costal cartilege. The stomach was drawn out, the cardiac and duodenal ends tied with iodoform gauze, and the tumor and stomach, up to within one and a quarter inches of the gauze ligatures, removed by transverse incisions. The removal of the adherent pancreas was somewhat difficult, and required six ligatures. The lesser omentum was in parts ligated and cut away. From the greater omentum a soft, oblong gland was removed. The two cut ends of the stomach were united by sutures in terraces. The operation lasted one and three-quarters hours. The patient was collapsed, but recovered and increased forty pounds in weight. The resected piece was 7.2 inches long and 7 inches broad.

Billroth said that such an operation could only be called a total extirpation when the cardia and pylorus were united.

Kahler remarked that experiments on dogs showed that they could live after extirpation of the stomach, and that there were observations which demonstrated that man also could be nourished without its aid.

Peroxide of Hydrogen for Cleaning the Hands.

Noble (*Medical and Surgical Reporter*, Feb. 28, 1891) advises the following method for rendering the hands aseptic:

The nails are trimmed reasonably short, and the subungual spaces cleared with the knife blade. The hands and forearms are then thoroughly washed in warm water, a good lather being made with soap, and a stiff nail-brush being vigorously applied. The water is renewed three times. The hands are next soaked in a saturated solution of permanganate of potassium, and this removed by soaking them in a saturated solution of oxalic acid. According to circumstances, the finger tips are then soaked in peroxide of hydrogen. For the final bath, corrosive sublimate solution, one to one thousand, is employed. The hands remain in the sublimate solution three minutes.

The Sterilization of Surgical Dressings.

A. Gleich (*Wiener klin. Wochenschrift*, Jan. 29, 1891) describes the method which is used for making aseptic the gauze which is employed in Billroth's clinic. The researches of Schlange have shown that when gauze has been subjected to a temperature of 248° F. for half an hour it is rendered aseptic. The method employed consists in placing the material in a closed cardboard box and subjecting it to the above temperature in an oven. The box is not to be opened until the dressing is about to be used. These boxes are cheap and can be used a number of times.

Forced Respiration.

Fell (*Journal of the American Medical Association*, March 7, 1891) advocates forced respiration, or the blowing of air into the lungs, as being preferable to artificial respiration by Sylvester's, Hall's or Howard's methods. He employs a bellows, air-control valve and face mask; or, if it is thought necessary, a tracheotomy is done and a tube introduced. An apparatus for previously warming the air may be attached.

Several cases are given detailing the method and illustrating its efficiency. In one case, after the cyanotic condition had been relieved by forced respiration, artificial respiration by Sylvester's method was tried and failed, and a return to forced respiration again relieved the cyanosis. In another case the blood from the tracheotomy wound was seen to change from a black to a bright-red color. Fifteen lives are said to have been saved by the method.

Abscess of the Lung.

Porter (*Journal of the American Med. Association*, March 7, 1891) discusses those cases of circumscribed suppuration which arise independently of tubercular processes. They spring from inflammations of the lung, perforations from without, and embolism. He presents two cases of his own and submits the following conclusions:

Abscess of the lung presents signs and symptoms which may admit of a positive diagnosis. Abscess of the lung may be the result of, or complicate gangrene from, occlusion of a bronchial artery. Operation is often demanded; the safest operation is the excision of a rib, since this most fully meets the indications for drainage. The result of such operations indicates the value of this comparatively new field for surgical investigation.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D.,

ASSISTED BY

DAVID CERNA, M.D., PH.D., AND THOMPSON S. WESTCOTT, M.D.

The Franklinic Interrupted Current.

William James Morton (*New York Medical Record*, Jan. 24, 1891) describes his new system of therapeutic administration of static electricity. This comprises "the development by an influence (Holtz) machine of a rapidly interrupted and graduated current, by means of a circuit-breaker, introduced into a circuit with and without condensers, and the medical applications of this current without and within the human body by moistened sponge or other electrodes, just as in the case of the ordinary galvanic and faradic currents." In practice, he says, "the electrical principles involved may be carried out by two main methods: (1) By including the circuit-breaker and patient in the primary current, with or without condensers; and (2) by including the circuit-breaker in one current and the patient in another—viz., in an induced or secondary circuit." "The circuit-breaker is a pair of adjustable metallic ball electrodes, introduced at any point of the circuit, having a narrow air space between the balls; the circuit 'makes' when a small spark overcomes the resistance of the intervening air, and 'breaks' when it fails to do so, and the current is due to rapidly successive equalizations of the differences of potential or oppositely charged condensers, whether prime conductors or with the addition of Leyden jars."

Estimating the number of alternations to each spark to be from a hundred thousand to a hundred million per second, according to the capacity and inertia of the circuit and the number of spark interruptions, at the least, to be two hundred per second, a current is obtained giving, under favorable conditions, twenty billion alternations per second. Such a current must possess physical properties strongly differentiated from the galvanic or faradic currents. "Applied to a motor-point, the Franklinic interrupted current produces a most vivid and persistent muscular contraction, with a minimum of pain; applied farther back on the trunk of a motor nerve, it throws large groups of muscles into contraction," which is "peculiarly painless as compared with that of faradic coils, and the influence is remarkably diffusive."

Accompanying a contraction of a large group of muscles is a peculiar sensation of lightness and buoyancy of the member. The arms, during passage of the current from hand to hand, "feel as if made of cork."

The second prominent characteristic of this current is its power of relieving pain, it seemingly possessing a specific analgesic quality, which can be explained only on the ground of the extraordinary frequency of the alternations of the current per second. The author has employed this current with success in treating all conditions for which electricity is now used, and has devised or adapted all the necessary apparatus for its practical application.

The Treatment of Pneumonia with Large Doses of Digitalis.

In considering the treatment of pneumonia, Petresco (*Therapeutische Monatshefte*, Feb., 1891) presents a remarkable paper, in which he extols the efficacy of large doses of digitalis. Previous to 1883, he advocated blood-letting and tartar-emetic, but since then, following the teachings of Traube, Wunderlich and others, he has constantly employed digitalis, but in doses very much larger than recommended by these writers. While they used fifteen to thirty grains of the leaves in twenty-four hours, the author regularly prescribes sixty to ninety grains, in infusion, and this for three or four days in succession, according to the indications. Without exception these doses have been well borne by the stomach, and

no case of poisoning has occurred. Careful analysis of his supply showed that his leaves were quite equal in strength to the best, and considerably above the average French product.

Not only in croupous and infectious pneumonias, but also in broncho- and pleuro-pneumonias, has he had remarkable success. He claims to have seen cases of croupous pneumonia which were undoubtedly cut short by this treatment, within twenty-four to forty-eight hours having observed an abrupt fall of temperature from 102 1-5°, 104°, 106½° (the highest observed), to 98 3-5°, 96 4-5°, and even 95°. With this fall of temperature the pulse declined from 110, 120, 140, or even higher, to 60, 40, 30, and even in one case to 24, the patient falling into a quiet sleep, which marked the beginning of a general and local improvement.

As compared with the results of treatment by the expectant method, and by emetics, alcohol, bromide of potash, caffeine, strophanthus or convallaria, he considers digitalis by far the most satisfactory. His statistics are certainly noteworthy. In 825 cases treated since 1883 by this method, he shows a mortality of only 2.06 per cent., while the ratio by other methods ranges from that of Benett, 3 per cent. for 129 cases under tonic treatment (6.8 per cent. for 720 cases by the expectant plan), to the appalling rate of 34 5 per cent. in 698 cases of Edinbourg's, treated by blood-letting.

Jambul in the Treatment of Diabetes.

Among the newer drugs which have been suggested for the treatment of diabetes mellitus, the seeds of Eugenia jambolana, Lamarck, a tree of the family myrtaceæ, growing in Java, the Molucca and Phillipine Islands, and in parts of India, have been most favorably commended by several English and American writers, most notably by Scott (*British and Colonial Druggist*, 1887). The chief advantage of the drug, as expressed by these observers, was the possibility of controlling the excretion of sugar, without the necessity of restricting the diet. A careful study of the subject has recently been undertaken by Villy (*Bulletin général de Thérapeutique*, Jan. 30, 1891), whose observations throw considerable light upon the chemistry and clinical action of this drug. Although as large a dose as an ounce to an ounce and a half of the seeds has been given to the adult in twenty-four hours, no case of poisoning has been recorded; and the author finds that a rabbit may be given its own weight of the drug within twenty-four hours without disturbance of its nutrition.

Contrary to the observations of Scott, it was demonstrated that jambul favors and hastens saccharine fermentation at a temperature of 70°. The same result was noted in experiments made at the normal temperature of the human body, but the process was somewhat more slow. Judged, therefore, simply by the result of experiments outside of the body, the drug would appear to be ill-suited to the indications of the disease.

His clinical observations are interesting, and seem to show that the applicability of this drug is quite limited. As long as the ordinary diet is permitted, the use of jambul is dangerous, as favoring the persistence of polyuria and increasing the excretion of sugar and urea. In cases of moderate degree, with or without azoturia, in stout and gouty patients, jambul seems to be of value, provided that at the same time an exclusive diet is maintained. In this respect the drug does not differ from other therapeutic agents employed in this disease. Most frequently sugar disappears rapidly from the urine, but reappears almost as soon as the medication is suspended.

In grave cases, where regulation of the diet appears to be without effect, jambul, like other remedies, is of no value. The powdered seed is well borne by the stomach to the amount of 150 to 320 grains, in divided doses, in the twenty-four hours.

Therapeutic Experiments with Nitrogen Monoxide.

Since Ziegler's enthusiastic papers published in 1864, little attention has been given to this gas except as an anæsthetic. But as recently as 1888, however, Hamilton

New York Medical Journal, June 28, 1888) speaks of it as "very valuable in the treatment of insomnia and allied states," and "as a psychopathic agent of greatest value in hysteria and certain forms of insanity."

W. R. BIRDSALL (*New York Med. Jour.*, March 7, 1891) now publishes the results of experiments upon sixteen patients suffering from various neurotic affections, and in none of these has the remedy had any positive beneficial effect, in several cases, indeed, exaggeration of the symptoms being produced. Eight to forty bagfuls of twenty per cent. diluted gas were given at a séance lasting from ten to thirty minutes. His cases embraced migraine, persistent headache (anæmic) muscular pains of *la grippe*, paralysis agitans, asthma with chronic bronchitis, insomnia, slight melancholia, opium habit, hypochondriasis, lithæmic neurasthenia, alcoholic depression, chronic bronchitis and hysteria. The chief cause of failure, he believes, lies in the transient effects of the gas; and while acknowledging that his experiments have been too few to warrant final conclusions, he thinks that the uses of nitrogen monoxide for medical and surgical purposes must be restricted to its effects as an anæsthetic and as a placebo.

THE PHYSIOLOGY OF ASPHYXIA AND THE ANÆSTHETIC ACTION OF PURE NITROGEN AND OXYGENATED NITROGEN.

From the following considerations, GEORGE JOHNSON (*British Med. Journal*, Feb. 21, 1891) concludes that the immediate cause of death from asphyxia is the arrest of pulmonary circulation:

(1) When the chest of an animal is opened immediately after death caused by a ligature on the trachea, the right cavities of the heart are found enormously distended, while the left are comparatively empty.

(2) When the heart of an animal is exposed during the progress of asphyxia, the right cavities are seen to become distended, while the left, which had been previously gorged, are found to be collapsed and nearly empty.

(3) In the last stage of asphyxia there is a continuous increase of pressure in the pulmonary artery, while the systemic arterial pressure is falling.

(4) That the arrest of the circulation through the lungs is due to the contraction of the pulmonary arterioles appears to be proved by the influence of agents which paralyze the arterioles—namely, nitrite of amyl, atropine, and an excessive dose of curare; the effect of which is that deprivation of air is unattended by distention of the right cavities of the heart and other evidence of obstructed pulmonary circulation, the life of the animal is prolonged for several minutes, and death ultimately results from the influence of venous blood upon the cardiac and nervous tissues.

He also finds that the phenomena which result from the inhalation of nitrous oxide are strictly analogous with those observed in the early stages of asphyxia; and, moreover, that inhalations of pure nitrogen and of nitrogen with three or five per cent. of oxygen, gave similar results, the average times of producing complete anæsthesia being 58.3 seconds, 67.5 seconds, and 87.5 seconds respectively.

BROMOL AND BENZOYLGUAIACOL.

A new antiseptic (*Therapeutische Monatshefte*, Feb., 1891) employed by RADEMAKER, under the name of "Bromol," is no other than tribromphenol, $C_6H_2Br_3OH$, which is formed when bromine water is added to a watery solution of carbolic acid, the same product as was investigated by F. Grimm, in 1888. The new drug, however, is said to differ from the old, which is white, in having a lemon-yellow color.

Pure tribromphenol, according to Grimm, is equivalent to carbolic acid as an antiseptic, and this author has employed it as a stimulating dressing for wounds and ulcers and for impregnating bandages and dressings.

Rademaker uses bromol in substance or in solution in oil, 1 to 30, or in ointment, 1

to 10, as a dressing for ulcers. In diphtheria he uses a solution in glycerin, 1 to 25, as a topical application. He also employs it internally in cholera infantum and typhoid fever, in doses of $\frac{7}{100}$ to $\frac{1}{5}$ grains.

Another new product, benzoylguaiacol, or benzoate of guaiacol, or benzosol, belongs to the group of salols. It is a colorless, nearly tasteless and odorless powder, insoluble in water, but readily soluble in chloroform, ether and alcohol, and liquefying at 101° to 1042-5° F. This substance is employed by Sahli, in doses of fifteen to thirty grains four or five times daily, in the treatment of pulmonary tuberculosis.

Antipyretics in Childhood.

Demme (abstract in *Therapeutische Monatshefte*, Feb., 1891) believes that a moderate elevation of temperature of a few days' duration is best treated without any antipyretic drug. When, however, a temperature of 104° F. is reached and maintained, these drugs are of decided importance, as in typhoid fever, rheumatism and broncho-pneumonia. In diphtheria, the acute exanthems and croupous pneumonia, on the other hand, they are to be avoided.

Salicylate of soda he employs in rheumatism, in daily doses of 7½ to 45 grains for children of between 2 and 15 years; and salol in about the same doses. He recommends thallin sulphate in typhoid fever in doses of 1-7 to ¾ grains for children from 3 to 15 years; antipyrine in the first stage of broncho-pneumonia in several hourly doses of three to fifteen grains; in later stages of the same disease quinine in equal doses. Acetanilide is efficient in the high temperatures of pulmonary tuberculosis, one to three times daily, in doses of ¾ to 4½ grains. Phenacetin, he thinks, is best given in several full doses, such as 1½ to 7½ grains, according to age.

The Action of the Salts of Cantharidinic Acid.

Liebreich (*Therapeutische Monatshefte*, March, 1891) has undertaken a study of the physiological action of the derivatives of cantharidin, and has reached results which may establish this drug as a very important remedy. From the observations of Cornil and of Aufrecht it has been accepted that the chief poisonous action of cantharidin was expended upon the kidneys. Liebreich, however, has determined that if a dose just sufficient to cause death be administered to a rabbit, the animal dies in a few hours from failure of respiration. *Post-mortem* examination of such animals shows no hyperæmia of the kidneys, and little or no hyperæmia of the lungs, but a somewhat increased consistency of their tissue, due to a serous uncoagulating exudate. This leakage from the capillaries seems to take place without increase of blood-pressure or essential change in heart action, and is comparable to the action of cantharides upon the skin.

In moderate doses, therefore, it seems evident that cantharidin acts especially upon the capillaries, producing a serous exudation, and only in case of severe poisoning does any cellular exudate appear. This property of the drug has led him to make experiments upon man, to test its effects upon pathological conditions due to localized irritative lesions, whether of a bacillary origin or not. For this purpose the subcutaneous method was employed. Cantharidin is insoluble in water, but, as shown by Cornil, is soluble in presence of potassium or sodium, with which it forms salts. In order to prevent irritation, this solution should contain no excess of alkali. He directs that a solution shall be made of the strength of .2 parts of cantharidin to .4 parts of potassium hydrate, or .3 parts of sodium hydrate in a thousand parts of water. The alkali must be pure, dry and free from carbonic acid. This solution remains clear on cooling and admits of the required dilution.

Commencing with a dose of $\frac{1}{3000}$ grain he was able to increase it to $\frac{1}{100}$ grain, at which slight symptoms of renal and vesical irritation became manifest. The latter quantity he therefore considers a maximum for adults, the average efficient dose being usually between $\frac{1}{1200}$ and $\frac{1}{600}$ grain. The injections have been made with antiseptic care beneath the skin of the back, and an interval of forty-eight hours has been allowed between successive applications of the remedy.

Numerous injections have been made, almost exclusively upon patients suffering from tubercular disease of the larynx and chronic inflammation of the chords, in whom the changes could be watched from day to day. The reaction is scarcely perceptible, but the diseased spot can be seen to become somewhat congested. The only precaution necessary is to watch the condition of the bowels and kidneys, any manifestation of commencing irritation in these organs demanding suspension of the injections until these symptoms have subsided, when the remedy may again be employed in smaller doses.

So far as the experiments have gone the results have been most encouraging, and the author asks for a critical investigation of the merits of his discovery by the profession at large.

Treatment of Burns.

Rottenberg (*Therapeutische Monatshefte*, March, 1891) employs the following treatment: Blisters are not opened, but are pierced with a silk thread, soaked in sublimate solution and left in place. The whole burned area is then spread with a ten per cent. iodoform-vaseline, and is covered with gummed paper or silk: the salve should be renewed daily. By this plan, pain is relieved at once, and cicatricial contraction is rare.

The Action of Valerian on Glucose.

In an interesting communication to the Académie de Sciences, Butte (*Le Mecredi Médical*, Feb. 25, 1891) studies the action of certain substances in regard to the destruction of glucose in the blood, with especial reference to the extract of valerian. Freshly-drawn blood, loaded with sugar, was mixed with the drug, with the result that the glucose was considerably diminished in quantity. The same effects were observed when sugar was added to normal blood, combined with valerian.

The researches were extended to the study of the drug in the economy; thus, analyses of the blood, after the administration of valerian, showed the absence of sugar. How this action is brought about has not been determined, but the author believes that valerian alters in some way certain phenomena of nutrition, and that from a practical point of view the drug has given happy results in the treatment of diabetes.

The Therapeutic Uses of Exalgine.

The effects of this new remedy, exalgine or methylacetanilide, have been carefully studied by Desnos (*Bull. général de Therapeutique*, Feb. 15, 1891). After reviewing the literature of the subject, Desnos gives the results of his experience in the treatment of disease by the new drug.

Exalgine was tried in the treatment of affections essentially characterized by pain, particularly in facial neuralgias, due to lesions of the trigeminal, and even to those of the occipital nerve. Congestive neuralgias, due to cold or a rheumatic condition, usually yielded to moderate doses; but if relapses occurred, the medicament was continued for a long time in large doses. A case is reported of a woman suffering from neuralgia, in whom enucleation of the eye-ball was not successful in relieving pain. She was given exalgine in doses of from 3 to 22½ grains, with the result that she was discharged cured in the course of thirteen days.

It was observed that the drug acted most favorably in neuralgias due to anæmia and syphilis. In diffused headaches and migraine, the results were negative or doubtful. In intercostal neuralgias the effects were generally satisfactory.

A persistent, very painful neuralgia of the brachial plexus was completely subdued by a dose of 22½ grains. In this case a pronounced tingling, which soon passed away, was experienced along the branches of the plexus. In neuralgias of the ileo-lumbar region, of a uterine origin, the drug did good; but relapses, due to the persistence of the lesion in the genital organs, only yielded to large doses.

Sciatic neuralgias were also checked by exalgine, one truly remarkable case being reported. The author has likewise obtained good results with the drug in the treatment of visceral neuralgias, the acute pains of locomotor ataxia, and has known exalgine to be of benefit in the pains of menstrual hysteralgia. A case of paralysis agitans, due to emotional causes, was cured by exalgine, and the drug was found of great service in certain cases of rheumatism.

In conclusion, Desnos considers exalgine a therapeutic agent of great value—an analgesic which is neither a hypnotic nor an antithermic in the proper sense of the word. To obtain the good effects of the drug, it should be given in full amounts. The usual dose is 3¾ grains, but 15 to 26 grains may be given without producing deleterious effects.

Atropine in the Treatment of Localized Muscular Spasm.

Two exceedingly interesting cases of localized muscular spasm, one cured and the other greatly relieved, are reported by Lesznsky, (*N. Y. Med. Journal*, March 14, 1891). The first, a man, 37 years of age, suffered from spasm of the right side of the neck, of three years' standing. There was a well-pronounced clonic-tonic spasm of the right platysma, with an area of complete anæsthesia, and a muscle hypertrophied to nearly four times its normal size. A four-months' treatment with electricity and medicines had been of no avail. Under the daily use of atropine, hypodermatically administered, the affection disappeared in the course of two weeks. The author employed a solution of one grain to the ounce, of which one minim represents $\frac{1}{480}$ of a grain of atropine, and one to ten minims were administered at a dose.

The second case was that of a woman, 50 years of age, with marked facial spasm, involving the orbicularis palpebrarum. Electrical treatment produced no relief. In two weeks, after the employment of atropine, the relief was marked, and the spasm was converted into tremors. The improvement in this case was sufficiently encouraging to commend the method of treatment. The doses varied from $\frac{1}{120}$ to $\frac{1}{40}$ of a grain.

The author believes that in these cases the alkaloid, locally ingested, acts directly upon the intra-muscular nerve filaments, and thus produces the beneficial results observed.

The Treatment of Diabetes by Arsenic.

Few diseases have been subjected to so many methods of treatment, hygienic, dietetic and remedial, as diabetes mellitus. The reason is obvious. The causes of the malady are as yet enshrouded in obscurity, and the fact is not to be wondered at that all treatment is, even at present, mainly empirical. Recent observations appear to show that of drugs that have been asserted by various writers to produce excellent results in diabetes, alteratives take the lead, such, for instance, as iodine and its compounds, especially iodoform and iodol.

Arsenic has been given a trial, with satisfactory results. Thus Cutherston (*Medical Standard*, March, 1891) reports five interesting cases of marked diabetes, where the use of arsenic in the form of Fowler's solution, combined with tincture of calumba, gave the best results. The drug was given in doses of three minims thrice daily, the ages of the patients varying from 28 to 62 years. The use of the drug was accompanied by the observance of a diabetic diet and the best hygienic surroundings, and the good results were seen in from two to four weeks. In one instance codeia had to be employed to aid the action of the alterative. The alkaloid was given in doses of two grains every two hours, gradually increasing it to fifteen grains in the twenty-four hours, but finally all the cases yielded to arsenic.

It is worthy of note that four out of the five cases reported were women, and the results confirm those obtained by previous observers, such as Trousseau, Owen Rees, Deuergie, Foville and others. The author believes that in these cases of diabetes arsenic does good by increasing the activity of the blood corpuscles, enabling the hæmoglobin to resist the toxic effects of the sugar by parting more readily with its oxygen and absorbing carbonic oxide.

Subnitrate of Bismuth in the Treatment of Infantile Eczema.

In the treatment of eczema of children, the following formula (*Nouveaux Remèdes, Le Progrès Médical*, Feb. 21, 1891) is recommended:

℞. Subnitrate of bismuth . . . . . 20 parts.
Oxide of zinc . . . . . 5 parts.
Phenic acid . . . . . 2 parts.
Vaseline . . . . . 30 parts.
Mix. Apply locally.

In cases where the most prominent symptoms are those of irritation, the best results are obtained by—

℞. Subnitrate of bismuth . . . . . 1¼ drachms.
Glycerine . . . . . 5 drachms.
Phenic acid . . . . . 12 drops.
Rose water . . . . . 7½ drachms.
Shake well and apply by means of a soft brush.

Abortive Treatment of Herpes by Applications of Pure Alcohol or of Alcoholic Solutions.

Leloir (*La Pratique Médicale*, Feb. 17, 1891) has been able, in a number of cases, to completely abort herpetic eruptions of the lips by the local application of carbolized alcohol, in the form of compresses. This treatment, however, has not given satisfactory results in herpes of the genitals. The vesicles of herpes zoster are acted upon favorably, but the eruption does not disappear except in rare cases.

The influence of the treatment by alcoholic solutions is remarkable. Whether applied at the erythematous or at the vesicular period, the herpetic eruption is generally aborted, and this is accomplished very rapidly, usually in the course of a few hours.

Leloir employs alcohol in different forms. For example:

℞. Alcohol, 90 per cent. . . . . 25 drachms.
Pure resorcin . . . . . 30 grains.

He often replaces the resorcin by thymol (15 grains), menthal (15 grains) or phenic acid (3¾ grains).

Other formulæ are employed by the author, as follows:

℞. Alcohol, 90 per cent. . . . . 25 drachms.
Resorcin . . . . . 30 grains.
Chlorhydrate of cocaine . . . . . 7½–30 grains.

℞. Alcohol, 90 per cent. . . . . 12½ drachms.
Tannin . . . . . 1½ drachms.

In private practice Leloir uses this preparation:

℞. Alcohol, 90 per cent. . . . . 25 drachms.
Extract of cannabis indica . . . . . 2½ drachms.
Chlorhydrate of cocaine . . . . . 15 grains.
Essence of peppermint . . . . . 2½ drachms.

Compresses, moistened with one of these mixtures, are applied upon the eruption, and are fixed by means of pieces of adhesive plaster, or, for the same purpose, collodion and medicated gelatine may be employed.

Injections of the Serum of Dog's Blood upon Tuberculous Patients.

Injections of the serum of dog's blood upon tuberculous patients have been tried by Verneuil (*Le Progrès Médical*, Feb. 21, 1891), the results of which have been recently

communicated by Richet to the Société de Biologie. The observations of Langlois, Héricourt and Saint-Hilaire have been confirmed by those of Verneuil from experiments made on two cases of surgical tuberculosis.

The first one was that of a young man suffering from a pleural fistula, the result of a purulent pleurisy and a subsequent surgical operation. The patient presented a state of depression and of pronounced anorexia, and had continuous vomiting. After a dozen injections, of one or two cubic centimetres each, administered in the course of twenty days, there were noticed an increase of bodily weight, an increase of strength, and a return of the appetite. After the first few days the vomiting completely disappeared. The patient was greatly benefited.

The second case was that of a young girl, also suffering from a fistula, as a consequence of a coxalgia. This patient, tuberculous and syphilitic at the same time, suffered from anorexia and great debility. However, after the injections, all feeling of fatigue disappeared; she ate well, and gained four pounds in bodily weight.

The preceding results agree with those previously obtained by Bertin, of Nantes, and Pick. These experimenters, however, employed in their trials the serum of goat's blood, but this does not act as a bactericide on the microbe of tuberculosis. In this relation, Nocard has reported a case of experimental tuberculosis in a goat.

Carbolate of Camphor.

This preparation is made (*Therapeutic Gazette*, Feb., 1891) by adding one part, by weight, of carbolic acid to three parts of camphor, setting aside for twenty-four hours, and straining through gauze. It is a permanent liquid, with a specific gravity of 990. It is thoroughly antiseptic, and possesses unsurpassed germicidal powers. Locally applied to wounds, by means of cotton or gauze, it prevents suppuration. When kept in contact with the skin for several days, it produced an eruption which can, however, be prevented by mixing the liquid with oil. Injected hypodermatically it gives the best results in aborting abscesses or boils and relieving pain.

When placed under the skin it produces anæsthesia of the surrounding parts, which lasts for several hours. There is some soreness, but no abscess results. The slight smarting felt at first, shortly disappears. For hypodermatic use, a little ether or pure alcohol should be added to the liquid.

Carbolate of camphor combines readily with alcohol, ether, fixed and essential oils and petroleum derivatives, but *not* with aqueous solutions or glycerin. It readily dissolves menthol, cocaine, salicylic acid, chloral hydrate, iodoform and corrosive sublimate.

According to M. B. Cochran, carbolate of camphor gives excellent results when locally applied in inflammations or ulcerations of the tonsils, pharynx or cervix uteri, and as a dressing in all kinds of wounds, where it readily prevents suppuration and acts as an antiseptic. As a lubricant in massage it is unsurpassed, especially in contracted muscles and stiffened joints. In herpes and erysipelas, applied with a soft brush, the remedy acts as a specific, relieving the pain and causing a healing process to be set up at once.

The writer reports a case of the latter affection in a child 3 weeks old. There was intense swelling of the face, the eyes had not been seen for two days, and the lips were so swollen that the infant could not suckle. The disease was rapidly advancing to the scalp. A mixture of one part of carbolate of camphor to two parts of olive oil was brushed over the face every three or four hours. The disorder was checked from the first applications. In twenty-four hours a marked change was observed. The child made a final recovery.

Good effects have been observed from the use of the remedy in vaginitis, vulvitis and pruritus vulvæ; also from its employment in cases of frost-bite. The best results have been obtained by internal administration in the form of capsules, in cases of gastric and intestinal catarrh.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND W. REYNOLDS WILSON, M.D.

The Diagnosis and Treatment of Extra-Uterine Pregnancy.

J. Smolsky, in a St. Petersburg Thesis, 1890, describes a very interesting case of tubal pregnancy, in which he and Professor Lebedeff established the diagnosis, by repeated examinations, by the presumptive signs of pregnancy, and by careful observation of the growth of the tubal tumor, with a study of the accompanying symptoms.

From his experience in this case and a careful study of literature, the author asserts that, in tubal pregnancy, the sac, in the first month, reaches the size of a pigeon's egg; in the beginning of the second, that of a walnut; midway between second and third, that of a hen's egg; in the third month, that of a fist, and in the fourth month, that of two fists. The diagnosis being established, it was proposed to perform laparotomy at the fourth month; but another physician saw the case at this time and declared his opinion that it was a case of blighted ovum in utero, with coincident pelvic tumor, and not tubal pregnancy. Acting upon this idea, he etherized the patient, dilated the cervical canal with Hegar's dilators, and curetted the uterine cavity. Directly after the operation the patient was found to be pulseless; she was revived for a time, but died eighteen hours later. The *post-mortem* examination showed a ruptured tubal pregnancy at the fourth month, and intra-peritoneal hemorrhage. On the strength of this experience the writer very properly warns the profession against operations upon, or instrumental examinations of, the womb where there is any reason to suspect the existence of extra-uterine pregnancy.

Abdominal Pregnancy Treated by Abdominal Section in the Fourteenth Month.

A. Chandelux, in the *Lyons Médicale* (Jan. 12, 1891), reports the following case: A woman, with the history and physical signs of abdominal pregnancy, was operated upon five months after term and the death of the fœtus. It was found impossible to remove the sac, so it was sewed to the abdominal wall, and the placenta was left undisturbed. Six days later an attempt was made to detach the placenta, which was only partially successful, and during which the sac wall was torn, and loops of intestine prolapsed through the tear. These were pushed back and held in place by two sponges, which were removed four days later, when it was found that the tear had been closed by adhesions. The patient finally made a good recovery.

Labor Obstructed by Unruptured and Thickened Hymen.

Ahlfeld reports two cases of this sort in the *Zeitschrift f. Geburtsh*, xxi. 1, 160. The writer points out the well-known fact that conception may occur through a minute opening in the hymen, and claims that an unruptured, thick hymen can oppose great resistance to the descent of the head, and will probably, if left to nature, be torn with such violence as to inflict extensive and perhaps serious injury upon the structures at the vaginal outlet. Ahlfeld advocates non-interference until the head has descended well in the parturient tract; then, rupture of the membranes, which are usually preserved intact in these cases until they protrude through the hymeneal opening; then, as the head presses upon the hymen, radiating incisions in its structure with scissors. In this way, the writer believes, can extensive tears of the vaginal outlet be avoided.

[The editor has seen two cases of labor complicated by unruptured hymen and small perforation. In neither was labor complicated, nor was interference demanded. The hymen was not, however, very thick in either case.]

Post-Partum Metrorrhagia due to Malarial Infection.

Liégeois (*Archives de Tocologie et de Gynécologie*, Jan., 1891) reports a case of recurring hemorrhage after delivery, which he attributes to malarial infection. He includes malaria as one of the predisposing causes of uterine hemorrhage after labor among those more generally recognized—namely, syphilis, mitral affections, nephritis, chlorosis and hæmophilia—although the researches of Billon and others are at variance with this opinion.

The case in question is that of a primapara, delivered on the 18th of February, 1890. Her labor, which was without complications, was followed, after the expulsion of the placenta, by the occurrence of severe hemorrhage. On the eighth day hemorrhage recurred with suppression of the lochia. Ergot was administered without effect. On the 5th of March the third hemorrhage occurred; on the 12th the fourth, which continued until the evening of the 13th. With the appearance of this fourth hemorrhage the puerpera began to suffer from fever and rigors, followed by sweating. The paroxysms, which resembled those of intermittent fever, occurred on three successive days. Upon the supposition that her symptoms were due to malaria—which had remained dormant up to the time of the rigors—she was given quinine in doses of seven and a half grains daily. The enlarged uterus during the first weeks after delivery interfered with the percussion of the spleen, so that the latter was not distinctly outlined. The quinine, administered two hours before the time at which the paroxysms were expected, was continued until the 20th of March. On the 25th another paroxysm occurred, but without the appearance of hemorrhage; quinine was begun again and continued until the middle of April. Inquiry into the origin of this infection disclosed the fact that the patient had been living for months before her confinement in a distinctly malarious neighborhood, where she had occupied at night a room on the ground-floor.

The question arises whether the flooding may not have been due to portions of retained placenta. The fever and rigors, together with the suppression of the lochia, are in harmony with this supposition. The repetition, however, of the rigors, the absence of fetid odor from the lochia, and the distinct history of exposure to malarial poison seem to confirm the hypothesis of the writer—namely, that the metrorrhagia and rigors were due to the same cause—that is, to malarial infection.

Management of the Third Stage of Labor.

Czempin (*Berlin. klin. Wochenschrift*, No. 2, Jan. 12, 1891), in an article entitled Expectancy in the Management of the Expulsion of the Placenta, revives the discussion of the management of the third stage of labor and the method of expelling the placenta. He considers that new light has been thrown upon the subject by the observations which Schultze and Dohrn have made of the natural method of expulsion, considered as a physiological event.

According to these observers, the third stage of labor, when left entirely to nature, is marked by three phases: First, the separation of the placenta and membranes from the uterine wall; second, the expulsion of the separated placenta from the uterine cavity; third, the expulsion of the placenta from the vagina.

In considering the way in which these three events are accomplished, he follows the description of Schultze, which is here given. Usually with the last pain, as the child is expelled from the uterine cavity, there occurs such a reduction in the size of the uterus that the placenta is necessarily partly detached. This detachment is favored by the absence of the pressure exerted by the presence of the fœtus in the uterus. The point of detachment is usually in the centre or toward the margin of the placenta. The blood which collects between the placenta and the uterine wall, together with the weight of the placenta itself, as it sinks into the uterine cavity, aids in extending the area of detachment to the margin of the placenta. The separation in this way causes an inversion of the membranes, and the placenta passes, with the fœtal surface presenting, through the rent corresponding to the position of the os. As it escapes from the vulva it is followed by the inverted membranes, containing the retro-placental clot. Thus, the separation of the placenta and membranes

and the expulsion of the placenta from the uterine cavity occur as a physiological process, which may be interfered with by efforts toward artificial expression. Dohrn and Ahlfeld have demonstrated that pressure over the fundus may express the clot from betweeen the placenta and the uterine wall, causing a fresh discharge of blood to take the place of the clot which has been expelled. In addition to this the blood is not allowed to accumulate and close up the open sinuses at the placental site, so that hemorrhage may occur. By the physiological separation of the placenta the emptied uterus finds time to contract uniformly, obviating the danger of atony.

For this last reason, and because of the danger of tearing the membranes and leaving shreds of them in the uterus, the writer disapproves of Credé's method. When, however, we have to do with the second phase of the natural process, that is, when the placenta is thoroughly separated from the placental site and lies in the lower uterine segment, it is proper to use compression in order that the third phase, namely, that in which the expulsion of the afterbirth through the vulva occurs, may be accomplished. In this he agrees with Ahlfeld, who waits, however, for one hour and a half, the time occupied by the first and second phases, according to his observations, before using compression to expel the placenta from the vagina. The writer, on the other hand, advises the attendant to aid contractions by gently rubbing over the fundus during the time the placenta is becoming detached, instead of trusting entirely to the efforts of nature, and reserving interference until the third phase has been reached. He also recommends that the nurse tie a piece of braid around the cord after the completion of the second stage of labor, just at the vulva, so that the degree of expulsion may be noted by measuring the distance between the braid and the vulva as the former advances.

In conclusion, he gives to Credé the credit of having dispelled the spectre of "adherent placenta," and to Ahlfeld that of having, through his method of expectancy, driven away the ghost of "atony of the uterus."

Life-Saving Methods in Still Births.

Lusk (*American Jour. Med. Sciences*, Feb., 1891) reports an interesting case of asphyxia neonatorum, in which nearly three hours were spent in varied methods of resuscitation before spontaneous respiratory movements were finally established. As explaining the first respiratory movement in the infant, whether prior or subsequent to birth, he quotes the theory of Schwartz (disturbed placental circulation, and consequent lack of oxygen in the blood of the child), that of Preyer (reflex movement provoked by cutaneous stimuli), and the recent experiments of Engstrom, which prove that when the placental respiration is suspended, the accumulation of unknown materials in the blood is capable of exciting the respiratory centre without the aid of peripheral stimuli, but that the latter are capable of exciting the respiratory act before the internal stimuli have increased sufficiently to induce independent action. External stimuli are also capable of exciting respiratory movements after the irritability of the medulla has been lowered to a point at which no response follows from the venous condition of the blood.

In asphyxia neonatorum Lusk believes the suspended animation is, with few exceptions, preceded by intra-uterine respirations caused by diminished blood supply to the placenta, resulting from tetanic contractions of the uterus, by premature detachment of the placenta, sudden death of the mother, and, most frequently, by compression of the cord. The prognosis depends upon the degree of asphyxia. In the milder cases muscular tonus is preserved, the head does not drop, extremities are not relaxed, skin is dusky-red or cyanotic, conjunctivæ injected, umbilical vessels distended, cardiac and umbilical pulsations slow but forcible, and reflex movements are easily produced by surface irritation. In the more advanced stage muscular tonus is lost, the head falls to one side, sphincters are relaxed, eyes glazed, reflex movements cannot be provoked, heart beats are feeble and infrequent, umbilical vessels are nearly empty, pulse scarcely perceptible, cutaneous circulation has disappeared, and the surface is pale and cold. The indications for treatment are, in all cases, to clear out the air passages, restore the irritability of the medulla, increase the force of the heart, and relieve the plethora of the heart and of the blood channels of the thorax.

In the milder cases he advises clearing the fauces with the finger, mouth-to-mouth insufflation if the nasal passages are obstructed, flagellation, alternate hot and cold bath. To guard against a fatal termination by atelectasis, a few days later, which not infrequently occurs, when the above treatment has been successful, he recommends the method of artificial respiration of Schultze.

In the cases of deep asphyxia, active movements are, as a rule, speedily followed by extinction of heart pulsations, and should, therefore, be omitted. The infant should be laid upon a table, warmly covered, fauces and nasal passages cleared, a No. 8 English elastic catheter passed into the trachea, and aspirated matters removed by suction. At intervals, insufflations through the tube into the bronchial tubes should be made, followed by compression of the chest walls. Then Sylvester's method, which Champneys has shown is followed by the fullest expansion of the air cells, is of service. When heart movements become plainly perceptible, the child should be immersed in warm water, the face sprinkled with cold water, and, finally, the swinging method of Schultze should be practised, to complete the establishment of the normal circulation.

MEDICINES TO NURSING MOTHERS; INFLUENCE OF THE MILK UPON THE INFANT.

SCHLING (*Gazette de Gynécologie*, Feb. 15, 1891—*Paris Médical*) has made a series of investigations with various medicines, and obtained the following results:

Sodium Salicylate.—Dose, fifteen to thirty grains. When the child was not put to the breast for an hour or more after the administration of the drug to the mother, it was always found in the infant's urine and disappeared in twenty-four hours. If the infant nursed very soon after administration, there was no trace of the drug in its urine.

Potassium Iodide.—Similar results. Analysis of the milk gave the characteristic reaction. Elimination in the infant lasted seventy-two hours; in the mother, forty-four hours. After twenty-four hours the milk contained the drug.

Potassium Ferro-cyanide.—Reaction very plain in the mother's urine. None in the infant's.

Iodoform.—Employed as applications to the vagina and vulva. After a rather prolonged use, as a rule, iodine was found in the milk and the mother's urine, but never in the urine of the infant.

Mercury.—Its transmission through the milk was always very feeble and irregular, and depended upon the quantity of milk absorbed.

Narcotics.—(a) *Tincture of Opium*, in doses of twenty to thirty drops. Thornhill has observed in the infant prolonged sleep. Fehling has noted neither prolongation of sleep nor constipation. (b) *Morphine Hydrochlorate.*—Solution 1–30; doses, gr. ⅙–⅓. No ill effects upon the child. (c) *Chloral.*—Dose, gr. xv.–xlv. Mean duration of maternal sleep, two hours. No action was noted upon strong and vigorous infants. When the child is feeble or premature there should always be an interval of at least two hours between the administration of the drug to the mother and nursing. (d) *Atropine Sulphate.*—Solution, 1–100. Subcutaneous injections, gr. 1-200–1-120. Pronounced symptoms were observed in the mother. Dilatation of the pupils was noted in the infant, which disappeared after twenty-four hours. The drug should not be given to nursing mothers except in very small doses.

Influence of Maternal Fever.—In an immense majority of cases the milk has no ill effects upon the child. When the mother was the subject of a grave disease with a persistent temperature of 104°, the fever curve of the infant presented the same characters as that of the mother. In a case of mastitis, Bumm has demonstrated the presence of micrococci in the milk and gastro-intestinal disturbance in the child.

GYNECOLOGY.

UNDER THE CHARGE OF

WILLIAM GOODELL, M.D.,

ASSISTED BY

J. M. BALDY, M.D.

Ichthyol in Diseases of Women.

Kötschau (*Münchener medicinische Wochenschrift*, Jan. 6, 1891) has used ichthyol with great success in twenty-eight cases of cervical endometritis; sixteen cases of endometritis of the body of the uterus; fifty-two cases of perimetritis; four cases of simple chronic metritis without disease of the appendages; twenty-seven cases of parametritis. The cases of endometritis were treated two or three times a week. In the mild cases the vaginal portion of the cervix was smeared over with ichthyol; a cotton tampon, wet with a watery or glycerine solution of the drug was introduced into the vagina. The more obstinate cases were curetted; this was in some instances repeated several times. In addition, daily vaginal irrigations were ordered, iron was given internally, and massage was used. The results were much better and quicker than after the use of the curette, followed by iodine or zinc applications.

The pelvic inflammatory conditions were treated by vaginal tampons of cotton dipped in a solution of ichthyol and glycerine; this was supplemented by ichthyol pills, given internally. Usually after one visit the pain was relieved, but the full treatment extended over the period of a month.

Conservative Treatment of Adherent but Functionally Active Ovaries and Fallopian Tubes.

The class of cases dealt with by Butler-Smythe (*The Lancet*, Feb. 21, 1891) are those in which the Fallopian tubes and ovaries are prolapsed and adherent, but in which there is no visible sign of disease of these organs. Such appendages are often the cause of great pain and ill-health and many of them have been ruthlessly sacrificed. This is not necessary, as the patient's life is not threatened, and the functions of the organs are not always destroyed. He holds that in such cases the separation of the adhesions and freeing of the ovaries and tubes can be accomplished, and is frequently sufficient to restore the patients to health.

He has operated in this manner three times. All of his patients were great and chronic sufferers from pelvic and reflex disorders. The first patient was fully relieved from her suffering. Six months after the operation, she had an attack of inflammation in her abdomen, since which time she has not been well. The remains of old cellulitis are still to be found. The uterus is movable. The second case has gained twenty-eight pounds and can walk miles. Her pelvic viscera are in a most satisfactory condition. Case 3 was relieved from most of her symptoms, and her menstruation is now almost painless. The pelvic viscera are free and movable. The uterus is enlarged. She has remained fairly well ever since the operation. Smythe has assisted at two other operations, where the same procedure was carried out. Both patients have done well so far, but the time is short. His own cases are reported after the lapse of about two years.

A Modification of Hysterorrhaphy for Chronic Senile Procidentia.

For chronic senile procidentia, the following procedure seems to Leith Napier (*British Medical Journal*, March 7, 1891) likely to become more generally used than any hitherto employed.

The uterus is well returned within the vagina and pressed firmly against the abdominal peritoneum. A short incision is made in the median line of the abdomen, down to the per-

itoneum. A narrow curved needle, fixed in a long, firm handle, is introduced *per vaginam* into the uterus; it is passed through the uterine walls and abdominal peritoneum on the right side, the point of the needle being brought out in the abdominal incision. The needle is threaded from the abdominal side, and the thread drawn down into the vagina. The needle is then re-introduced in a similar manner on the left side, and the other end of the thread brought into the vagina. There are now two free ends inferiorly, with a loop on the abdominal aspect; the latter should be divided. On each end of the thread protruding from the vagina, a small, stout, flattened ovoid glass disc, with rounded edges, or a plate of decalcified chicken bone, is slipped. A little manipulation may be needed to get the discs through the cervix into the uterus. The sutures are now drawn tight from the abdominal ends, till both discs are closely applied to the inner uterine wall. The abdominal ends of the sutures are now threaded and passed through the muscular layers of the abdomen; discs of bone or glass may be slipped on, and the sutures secured and buried. Two deeply buried stitches, including the whole thickness of the uterine wall, but not passing through the endometrium, may be used to further connect the uterus with the abdominal muscles. (See FLORIAN KRUG, uterine retro-displacements, *N. Y. Med. Jour.*, Jan. 3, 1891.) These latter stitches are only to be used when the uterus is large and heavy. The abdominal wound is closed. The vaginal ends of the sutures are allowed to hang from the vagina for ten days for the purpose of drainage, at the end of which time they are cut off close to the os. The vagina is packed with antiseptic tampons. The patient should be kept in bed for three weeks, and a pessary should be worn for several months. In event of retro-uterine adhesions, it may be necessary to open the peritoneal cavity and break these down.

[The above operation could be greatly shortened and simplified if the needle was first threaded with one end of the suture, and passed as described through the right side. It could then be withdrawn, threaded with the other end of the suture, and carried through the left side, as described. There would now be two free ends in the abdominal wound and the loop in the uterus. The two free ends could be pulled taut, and tied in the depth of the wound. Or they could be carried through the whole thickness of the abdominal walls, on each side of the incision, thus closing the wound as they were tied on the skin surface; the use of further sutures would then be obviated. The bone or glass discs would be entirely done away with.—J. M. B.]

THE INFLUENCE OF VENTRO-FIXATION OF THE UTERUS ON SUBSEQUENT PREGNANCY.

GOTTSCHALK (*Centralblatt f. Gynäkologie*, Feb. 21, 1891) is now in a position to show that ventro-fixation of the uterus predisposes to abortion in subsequent pregnancies. On the 10th of November, 1889, he removed a small ovarian cyst from a woman who had already borne four children at full term, and fixed the retroflexed uterus to the abdominal wall by means of two silk sutures, in the typical way. The uterus adhered to the abdominal wall and remained permanently in that position. It was fairly movable. Previous to the operation she had suffered greatly, but afterward was completely relieved. Eleven months later she conceived and aborted in three months. The uterus was found to be still adherent to the abdominal wall. The anterior wall of the uterus, up to the point where it was adherent, was quite thick. The posterior wall, throughout its whole extent, including the fundus, was as thin as paper. Gottschalk explains this difference in thickness by the supposition that the adhesions between the abdominal wall and the uterus on its anterior aspect prevented the anterior wall from expanding with the growing product of conception; the necessary room was therefore obtained at the expense of the posterior wall, which became, in consequence, much thinner than natural. Fortunately this soon produced abortion, else the uterus subsequently might have ruptured. He can account for the abortion in no other way.

Olshausen observed a case one and a half years after a ventro-fixation had been performed by Kaltenbach. The woman was at this time pregnant, and went to full term safely. The uterus was found not to be adherent. It is altogether possible that the uterus became detached during the pregnancy on account of the great change in the circulation of the genital organs; it is much more likely that the operation had proved a failure, and the uterus was free before the pregnancy occurred.

If a woman, during the child-bearing period, suffers from adherent retroflection, and still wishes to bear children, she should have the benefit of all other treatment before resorting to laparotomy. Should it be necessary to open the abdomen and free the adhesions, the uterus should be held in place by a properly fitting pessary, and not by ventrofixation. It will be the exceptional case, however, in which the adhesions cannot be overcome in two or three sittings by Schultze's method, applied systematically and with patience.

Formula for Dysmenorrhœa.

Monin (*L'Union Médicale*, March 5, 1891) recommends the following for dysmenorrhœa of chlorosis:

℞. Alcohol of melissa . . . . . }
Tincture of saffron . . . . . } of each, 1½ ounces.
Tincture of iodine . . . . . }

Mix. Twelve drops daily, before each of the two principal meals, for two months.

Every eight days, a warm bath, containing three and one-half ounces of chlorate of ammonia.

Antiseptic Gauze.

For plugging the uterus, Bar (*La Pratique Médicale*, Feb. 17, 1891) has employed with advantage a gauze medicated with retinol iodoform. It is used as follows: The gauze, after being boiled in strong carbolized water and well dried, is dipped in a mixture, the formula of which is not yet very precise; but the one used in the service of Bar consists of—

℞. Retinol . . . . . 15 drachms.
Wax . . . . . 1½ drachms.
Iodoform . . . . . 8¾ drachms.

The employment of this mixture, as applied by means of the gauze, appears to present unusual advantages. Tampons made with gauze, prepared in this manner, are especially useful, inasmuch as they are apt to leave a good coating of iodoform upon the vaginal or cervical surface, and thus assure complete asepsis of the mucous membrane.

A New Theory of Menstruation.

Robinson (*N. Y. Medical Journal*, Jan. 24, 1891) advances the view that menstruation is governed by the ganglia situated in the uterine walls and along the tubes and closely connected with the ovaries, and that tubal motion constitutes the cycle of the menstrual period due to ganglia.

During menstruation the tube has a very marked cycle of movement. Its activity is greatest at the time of menstruation and its walls are dark-blue and crimson with injected blood. When the Graafian vesicle is ready to burst, the fimbriæ are enormously enlarged. As the ovary shrinks, so the tube shrinks to its normal size to begin a new cycle of motion. The marked organ in the whole process is the tube. Menstruation might be called the motion of the tubes. The tubes do not respond to every ripening crop of eggs in the ovary alike. The ovum has degenerated, and the tube will not go through its rhythmical cycle. The theory that the lining membrane of the uterus is not a mucous membrane, but a glandular tissue, is upheld. This "gland" plays a certain part in menstruation, but is subordinate to the action of the tubes.

It is simply the old automaton—a plexus of nerves studded over with numerous ganglia—that induces the uterus and tubes to perform their rhythmic cycle. This theory is perfectly compatible with the known fact that removal of tubes does not always prevent menstruation.

Intra-Uterine Galvano Cauterization in Gynecology.

Apostoli (*Bull. et Mem. de la Soc. de Méd. Prat. de Paris*, Feb. 15, 1891), in support of his electrical treatment, lays down briefly the following propositions: The galvanic current finds its principal indication in gynecology in endometritis and fibromata; it is sovereign in circulatory and painful affections (amenorrhœa, dysmenorrhœa and metrorrhagia), and it is of powerful assistance in arresting the evolution of benign neoplasms, and in aiding in the reabsorption of peri-uterine exudations. It exercises a very salutary resolutive action in many of the peri-uterine phlegmasiæ and in catarrhal ovaro-salpingitis; but it is inefficient, and it may be even harmful in strong intensity, especially if the intra-uterine pole is negative, in the suppurating phlegmasiæ of the appendages.

In his justification of the application of high intensities, he claims that electrotherapy, as well as general therapeutics, should be essentially seasonable in its employment, and that its dose should be modified according to the clinical indications, which vary in each instance. It has been necessary to employ the galvanic current in various degrees of intensity, in order to arrive at the most beneficial strength necessary to accomplish the desired object. In certain conditions high intensities of the galvanic current must be employed where weak currents will have no effect. The current should be increased in power progressively and with due warning to the patient. Every fluid collection, suppurating or bloody, uterine or peri-uterine, absolutely contraindicates high intensity, while it calls for an evacuation more or less speedy, or for surgical extirpation. The current, however, in such cases acts as a valuable means of diagnosis, since relief not following its application, it will lead to the suspicion of a cystic condition which further examination will reveal. The positive pole of the constant galvanic current has, in addition, a powerful action in destroying microbes, especially the destructive bacteria.

The intra-uterine application facilitates the penetration *en masse* of the current, because the uterine mucosa of feeble resisting power will be readily traversed by the current. In cases of peri-uterine affections (para- and peri-metritis) if there be any resistance offered to the purely intra-uterine application, he claims immediate relief for the peripheral vaginal galvano-puncture. Patients thus treated have said that while "galvano-puncture has been the most painful operation, it has been followed by the most complete amelioration of the symptoms."

There is no danger of ultimate sterility from the intra-uterine treatment, since Apostoli has collected thirty observations of patients so treated who have gone to full term in a subsequent pregnancy.

During the eight years, from July, 1882, to July, 1890, Apostoli has treated 912 cases, consisting of 531 fibromata, 133 simple endometritis, and 248 endometritis complicated with peri-uterine phlegmasiæ (peri-metritis, para-metritis, or inflammation of the appendages). Eleven thousand four hundred and ninety-nine galvanic applications were made as follows:

8,177 positive galvano-caustics, intra-uterine.
2,486 negative " " " "
222 positive vaginal galvano-punctures.
614 negative " " "

During this time he has had three deaths, the first due to a galvano-puncture made too deeply into the peritoneal cavity upon an extra-uterine fibroid; the second due to a puncture of an ovaro-salpingitis, probably suppurative (no autopsy was made). There had been an intestinal perforation. The third was due to a grave diagnostic error, where an ovarian cyst was mistaken for a fibroma and improperly treated.

MISCELLANEOUS.

ADDRESS TO THE D. HAYES AGNEW SURGICAL SOCIETY OF THE UNDERGRADUATES IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY.

By James Tyson, M.D.,
Professor of Clinical Medicine.

Gentlemen: When I received the invitation from your president to make some remarks at the opening of this meeting I felt that I could not decline, although sure that some one could have been found who would have done ampler justice to the occasion. I felt thus because I thought I was in a position to appreciate to the fullest extent the excellent purposes served by societies such as this is, and in considering such purposes I take it for granted that your Society, although named after a distinguished surgeon, and having "surgical" in its name, does not restrict itself to purely surgical themes. I presume, in a word, that its purposes are the broadest assumed by a medical society using the word "medical" also in its widest sense as covering everything pertaining to medicine and surgery, as well as anatomy, physiology and pathology in their application to medicine and surgery.

Much, if not most, of the best work in medicine and surgery has been done in societies, and most of it would never have been done at all but for the societies in which it originated. Societies stimulate effort and secure work by systematic methods of soliciting it, and by the opportunity of criticism which every honest worker desires to encounter. But it is hardly in these ways, I take it, that the members of the Agnew Society expect to profit by their organization of an undergraduates' medical society. It is rather as a school of instruction and a training-school that I look for the best results at this stage of your career, although the purposes alluded to may also be served by it. With your permission, therefore, I propose to refer to some of the methods by which these purposes are secured in a medical society of undergraduates, and the best means of carrying them out.

One of the first of these is that it teaches you to say what you know. No accomplishment is more effective and useful than to be able to say exactly what you mean in clear and brief language, and in the main it is an accomplishment which must be acquired by practice. Such practice is afforded in the undergraduate society. In availing yourselves of it I advise you to speak whenever possible without manuscript and without providing set speech. Careful thought should be expended upon the subject-matter to be discussed, and on the proper arrangement of its parts, but the choice of language should be left to the occa-

sion. In so doing you may find your remarks unexpectedly short, and will find that you have left out much that you intended to say. But you will find, too, that each succeeding effort will be more successful, and that you will not only be able to say all you intended that is worth saying, but that you will be uttering thoughts which had not occurred to you before rising; in other words, you will learn to think on your feet, the greatest of all accomplishments in a speaker, and an accomplishment which is indispensable in a debate.

Allow me to lay upon you another injunction which is of the greatest importance early in your career as speakers, and that is to cultivate accuracy of speech and the habit of expressing the exact truth in your statements. I am sorry to say that such practice is not nearly so invariable as it should be, not from a desire to be untruthful so much as from carelessness. Thus a man will say that he has repeatedly seen such a condition, when once or twice will be the exact truth; or he has seen hundreds of cases of such a kind, when perhaps he could count the entire number on his fingers. I am not speaking now of the acknowledged liar whom no one believes, but of the careless speaker who but needs to have his attention called to the matter early in his experience in order to avoid it, while unheeded it is apt to grow to such large dimensions that the attribute of unreliability arises from it. There is nothing more valuable to a speaker than to have known of him that what he says is exactly true, and nothing more damaging than to be discredited—to have his statements discounted.

Another purpose which ought to be sought in such a society is courtesy in debate. Courtesy in not inconsistent with candid criticism, but while the weak points in a writer's paper should be singled out, this should be done with due consideration, and flat contradiction is never needed. On the other hand, criticism given in the right spirit should ever be welcomed, and no one who takes offence at it will ever reach a high standard as speaker or debater.

A question which has often given rise to needless disturbance in societies is one of priority in a scientific discovery or mechanical invention, and it has seemed to me that the more trifling the discovery or invention, the greater the amount of feeling created over it. I have known two splendid fellows, each a genius and a master, break a friendship of years over the question of priority in the use of an appliance too trifling to exert a ripple in the relations of sensible men. The greatest minds are the most indifferent about such matters, and I am proud to call colleague one of these, whose conduct in such affairs may be an example to all of us. I refer to Joseph Leidy. Such is always he who seeks knowledge for knowledge's sake. I commend him for your imitation as one whose simplicity and modesty are as striking as his greatness.

PERSONAL NOTE.

Dr. J. M. Baldy, of Philadelphia, has been elected Professor of Gynecology in the Philadelphia Polyclinic and College for Graduates in Medicine.

THE CHAIR OF THERAPEUTICS IN JEFFERSON MEDICAL COLLEGE.

At a meeting of the Board of Trustees of Jefferson Medical College, held Wednesday, April 22, 1891, Dr. Hobart Amory Hare was elected Professor of Materia Medica and Therapeutics.

Dr. Hare was graduated from the Medical Department of the University of Pennsylvania in 1884, and began at once to devote himself to the study of experimental therapeutics. The results of his laboratory researches were distinguished alike by their scientific spirit and their value as exponents of the important study of the physiological action of remedies.

In addition to these researches in physiology and experimental therapeutics Dr. Hare has published numerous prize essays. In 1888 his monograph upon "Affections of the Mediastinum" was awarded the Fothergillian Medal of the Medical Society of London. In 1889 an essay, written in conjunction with Dr. Edward Martin, entitled "The Functions of the Phrenic Nerve and the Best Methods of Artificial Respiration," was awarded the Warren Triennial Prize of the Massachusetts General Hospital. In 1890 Dr. Hare's works on "Fever: its Pathology and Treatment," and "Epilepsy: its Pathology and Therapeutics," were published. The former received the Boylston Prize, and the latter the award of the Royal Academy of Medicine in Belgium. Dr. Hare has a number of times secured the Fiske Fund Prize of the Rhode Island Medical Society, one of these researches on the "Treatment of Wounds and Obstruction of the Intestines" having been undertaken in association with Dr. Edward Martin.

Dr. Hare's most extensive work—"Practical Therapeutics"—appeared in the fall of 1890, and the edition was rapidly exhausted because he succeeded in producing a book which was a capital example of the harmonious union of the physiological action of remedies and the practical application of these remedies to the cure of disease.

Dr. Hare for a number of years has held the position of Demonstrator of Therapeutics in the University of Pennsylvania, and about a year ago was elected Clinical Professor of Diseases of Children in the same institution. He was a member of the Editorial Committee of the University Medical Magazine during the first year of its publication and resigned this position to accept the editorship of the *Medical News*, a duty which he has administered with rare skill and judgment.

The trustees of the Jefferson Medical College have been most happy in their selection of Dr. Hare to fill the important chair of therapeutics, and have called to this position a man singularly gifted, well trained in practical and scientific knowledge, possessed of indomitable energy, and with a record of the highest type of professional success.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

THE meetings of the Congress of American Physicians and Surgeons will be held in Washington, from 3 to 6 P.M., September 22, 23, 24 and 25, 1891.

WILLIAM PEPPER,
Chairman of the Executive Committee.

AMERICAN ACADEMY OF MEDICINE.

THE sixteenth annual meeting of the American Academy of Medicine will be held at Washington, D.C., May 2 and 4, opening at 3 P.M., May 2. As it will be just previous to the sessions of the American Medical Association, members will be able to attend both meetings.

CORRESPONDENCE.

TUBERCULINUM KOCHII.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE:

DEAR SIRS: Last Saturday, April 11, Dr. Pepper received a couple of flasks of *tuberculinum Kochii* for the Commission, and around the flasks was wrapped a circular, the translation of which follows, differing in text (to some extent) from the one sent out with the flasks at the beginning of the excitement. I send it because it may be of interest to the readers of the MAGAZINE.

Yours truly, JOHN MARSHALL.

DIRECTIONS TO PHYSICIANS IN THE USE OF TUBERCULINUM KOCHII.

The *Tuberculinum Kochii* can be obtained by the physician in original flasks from apothecaries on the presentation of his prescription.

The maximum dose for the first injection in adults in cases of undoubted tuberculosis of any kind is 0.001 c.c. In children it is advisable to reduce the above dose by one-half or one-tenth, according to the age of the child.

At the beginning there must be an interval of at least one day between the injections.

The dose is increased at the beginning by 0.001 c.c. until 0.005 c.c. have been given. From that time forward the dose may be increased by 0.002 c.c.

From 0.01 c.c., according to the condition of the patient, a more rapid increase in the dose is allowable.

As a rule, a dose of 0.1 c.c. should not be exceeded.

Ordinarily, a 0.5 per cent. solution of carbolic acid is to be used for diluting the tuberculin, although stronger solutions of carbolic acid may also be employed.

The dilutions are made in such a manner that a primary 10 per cent. solution of the tuberculin is prepared by adding 1 c.c. of the tuberculin to 9 c.c. of the 0.5 per cent.

carbolic acid solution. In the same manner a 1 per cent. solution of the tuberculin may be prepared (*i. e.*, from the 10 per cent. solution by adding 1 c.c. of the 10 per cent. solution to 9 c.c. of 0.5 per cent. carbolic acid solution).

It is not advisable to prepare larger quantities of the dilutions than can be used in several days.

As soon as any turbidity is observable in any of the dilutions it is evidence of change, and they must not be used. Several days before undergoing the treatment the temperature of the patient should be taken morning, noon and evening.

Before beginning the treatment an accurate physical examination of the thoracic viscera and larynx should be made.

The expectorations are to be examined for tubercle bacilli, and in cases of diarrhœa the stools should be examined for tubercle bacilli.

The injections should be made as early as possible in the day, and after the injection the temperature should be taken every three hours.

If, in consequence of the injection, the temperature should rise to 39° C., the following (next) dose must not be increased. In such a case the same dose is repeated until the temperature no longer rises above 38° C.

In case a higher temperature should for a longer time prevail, the next injection should not be made before the temperature rises to 38° C. at the highest.

In doubtful cases, when much depends upon the diagnosis, and also in quite recent cases of tuberculous affections, for instance, catarrh of the apex of one side, tuberculosis of a joint, lupus which is not widespread, a dose of 0.005 c.c. may be given as the initial dose which, in case no reaction occurs, may be increased to 0.01 c.c. and subsequently to 0.02 c.c.

Special care is required in all cases of advanced tuberculosis of the lungs, tuberculosis of the larynx, extended lupus of the face (on account of affections of the brain not infrequently accompanying it), tuberculosis of the intestines (perforation), tuberculosis of the brain, also in complications accompanying heart affections, diabetes, etc.

When hæmoptysis or other alarming symptoms appear the use of the remedy is to be suspended.

Examinations of the sputum should be made about every eighth day. The ascertaining of the patient's weight at regular intervals is also very desirable.'

It is recommended that the syringe used should be tested as to the volume it holds, and should be disinfected by absolute alcohol after each time it is used.

DR. A. LIBBERTZ,
N. W. Lueneburgerstrasse, No. 28.

Berlin, February 7, 1891.

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ORIGINAL ARTICLES.

SUB-ACUTE ARTHRITIS IN THE CHILD-BEARING WOMAN, WITH SPECIAL REFERENCE TO ETIOLOGY.

By Barton Cooke Hirst, M.D.,
Professor of Obstetrics, University of Pennsylvania.

The term "puerperal rheumatism" is commonly employed to designate a condition complicating the child-bearing process characterized by a sub-acute arthritis of one of the large joints, not fugacious, appearing most frequently in the puerperal state, affecting most often the knee, running a long course, not associated with general septic infection, having nothing in common with muscular or articular rheumatism and ending in about four-fifths of the cases in more or less complete ankylosis. There is little preceding or accompanying fever or disturbance of the general health. The swelling of the joint may be considerable, but the pain is not very great when the part is at rest. There are no sweats or heart complications as in acute articular rheumatism. The duration of the disease is long. In seventeen cases reported by Tison, it lasted about six weeks in five, between two and three months in four, between four and five months in four, between five and six months in four.

The name which is usually conferred upon this condition could not well be more unfortunate. It necessarily suggests a rheumatic origin for the joint affec-

tion; whereas, there is not the slightest connection etiologically between the two. On the other hand, it is not entirely dependent upon the puerperal condition, being seen in pregnancy and altogether apart from the child-bearing process in gonorrhœa. There have been few questions in obstetrics more disputed than the cause of this sub-acute arthritis. Most of the German writers declare that it is nothing but the so-called gonorrhœal rheumatism and that its connection with the child-bearing process is simply a coincidence. This opinion is held by some French observers, but the majority look upon it as an affection dependent upon the pregnant or puerperal condition. Before attempting to discuss the relationship between the sub-acute arthritis of a child-bearing woman and a similar affection complicating gonorrhœa, it is necessary to glance for a moment at the etiology of the latter.

It has been asserted by a few observers that the gonococcus can be detected in the joint effusion of gonorrhœal rheumatism, but this assertion is contradicted by many negative results obtained by more careful and conscientious work. To my mind there can be little doubt that Bumm is correct in explaining gonorrhœal rheumatism on the ground of a mild pyogenic infection for which the gonorrhœal inflammation of the mucous membranes prepares the way. This knowledge of the etiology of gonorrhœal rheumatism clears up a great part of the obscurity which surrounds the etiology of arthritis in the puerperal subject. If one allows that the former is merely a mild grade of pyogenic infection, he can reconcile at once the conflicting statements of those who claim the gonorrhœal origin for the disease in every case and those who would ascribe it to some change in the organism the result of pregnancy or of the puerperium.

While there is nothing which so diminishes the resistance of mucous membranes to body infection by microbes as gonorrhœal inflammation, one can easily imagine a somewhat similar diminution of vitality in the mucous membrane of the vagina, as the result of pressure and the injuries which are so frequent in parturition.

Those who claim that the disease under description is without exception of gonorrhœal origin have an easy task to support their assertion. The following case, for instance, which was under my observation in the Philadelphia Hospital a short time ago, furnishes conclusive proof that many cases have, in fact, this origin:

A Russian woman, aged 32, had had three children; the last was born six weeks before I saw her. She was brought to the hospital with a sub-acute arthritis of the left ankle. The joint trouble had appeared five weeks before delivery. Since she has been under observation in the hospital, about a month, she has had fever of a low grade, the temperature running up every evening between 99° and 100.° Her child developed directly after birth a very severe case of gonorrhœal ophthalmia.

There was no doubt in this case that the woman had had gonorrhœa during pregnancy and that the arthritis was nothing more than a so-called gonorrhœal rheumatism. Indeed, I believe that every case of this sort which develops during pregnancy may be traced to a gonorrhœa. A very interesting case supporting this belief was reported some time ago in a French thesis. A woman

was the subject of gonorrhœal vaginal discharge, the nature of which was established by the discovery of the gonococcus. Under appropriate local treatment, the discharge had almost entirely disappeared, to reappear several weeks later with all its former intensity under the influence of a pregnancy of three months. One of the large joints soon became affected. If this girl's history had not been known, the gonorrhœal origin of the arthritis might easily have been overlooked.

An interesting observation quite recently made confirms the belief that sub-acute arthritis in the female is usually of gonorrhœal origin. Henry Koplik, in the New York *Medical Journal*, June 25th, 1890, describes two cases of joint affection in young children, one 5 years, the other 3½ years of age. One would not be apt to think of gonorrhœal rheumatism in such patients, but both these children were suffering from a vulvo-vaginal discharge in which the gonococcus of Neisser was discovered. For further support of this argument, one might point to the difficulty of diagnosticating gonorrhœa in the female and the ever present possibility of its existence unsuspected and possibly undiscoverable.

To support the opposite claim that sub-acute arthritis in a child-bearing female is not necessarily dependent on gonorrhœa, but may have for its origin the peculiar conditions of the puerperal state, is a much more difficult task; but it seems to me that some of these cases, constituting, however, the minority, have no connection at all with gonorrhœa. It is a well-known fact that pyogenic infection from any cause may manifest itself in just this way. For example, Koplik (loc. cit.) describes a case in which there was a well-marked affection of the left knee in a young child, the result of a septic inflammation around a vaccine pustule on the arm. Further, it is a well-known fact that grave varieties of septic infection in the puerperal state often manifest themselves in suppuration of one or several of the large joints, together with serious involvement of many other regions of the body and with the local signs of septicæmia. It is easy to conceive of a lesser grade of pyogenic infection which will confine itself entirely to one of the large joints, from the fact that the synovial membrane seems often to be less resisting to the invasion of pyogenic microbes than other portions of the body. If, therefore, one encounters a case of sub-acute arthritis in a puerperal subject in which no trace of gonorrhœa can be discovered, it would be a mistake, I think, to insist upon a pre-existing specific infection in order to account for the joint trouble. For example, in a case which I saw a few years ago in the Maternity Hospital, in which one of the knees was affected some days after labor, there was no reason whatever to suspect gonorrhœa. The woman had been in the hospital a long time before confinement; there was no history of a vulvo-vaginal discharge, and the child's eyes were not infected. It seems clear to me that in this case there was a slight pyogenic infection of the genital region through the numerous cracks and fissures in the vaginal mucous membrane.

As for the treatment of this affection, it would seem almost unnecessary to condemn the use of salicylate of sodium which might be suggested by the resem-

blance of the disease to articular rheumatism; but this is a mistake frequently made in practice. It is always a wise precaution to begin the treatment by thorough disinfection of the whole parturient tract, as the disease, whether the result of gonorrhœa or not, has originated in infection of this region. I have seen good results in the few cases that have come under my observation from the use of a mixed belladonna and mercury ointment, the application of iodine around the joint, and, in order to prevent complete ankylosis, the employment of gentle massage and passive motion, as soon as some decrease in the swelling and pain permits of this treatment.

SOME SUGGESTIONS IN REGARD TO INTRA-NASAL PRESSURE.

By Arthur Ames Bliss, M.D.,

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The Outlines and Structure of the Nasal Chambers.—The nasal chambers include spaces within the skull, whose anterior walls form about one-third of the face. These spaces might be included within the lines of a triangle whose rounded apex would cover the inner third of the superciliary ridges and "root of nose." Its lateral arms would extend downward, inward and backward, and join the extremities of a base line, which, running through the junction of the hard and soft palate, would terminate at the outer angles of the tuberosities of the superior maxillæ, immediately behind the third molar teeth. Posterior to the base line would extend the important annex of the post-nasal space; above and behind the triangle would lie the posterior superior half of the nasal air passages, the sphenoidal sinus, and two ethmoidal sinuses. The figure itself would bisect the superior maxillary antra and the frontal sinus, while below and in front of it, would lie the larger portion of the anterior nares. The antero-posterior depth of this area extends from the external openings of the nares to the tubercle on the anterior arch of the first cervical vertebra. Its irregular, but generally rounded roof, beginning with the basilar process of the occipital bone, lies immediately beneath the central part of the frontal cerebral lobes, as far back as the sella Turcica of the sphenoid, and also beneath and to the inner side of the orbits. This roof is formed of bones, which, in places, are of tissue-paper thickness. With the exception of the inferior maxillary and malar bones, every bone of the face, together with the basilar process of the occipital bone, enters into the formation of these tortuous and extensive areas.

The development of this tract, commencing at the fourth week of fœtal life,

is not completed before the eleventh or twelfth year. The many separate centres of development in each bone ; the fact that, during the process of growth, these parts are subjected to varying degrees of pressure and stress, as cavities are formed where counter-pressure is nil ; the exposed position of the anterior portion, or nose proper, subject, as it is through childhood, to frequent traumatism, are circumstances which join to distort this area of the skull and to cause unending variations in individuals. The nasal septum is especially exposed to the influences of pressure. Developing by three distinct centres, formed of a cartilaginous plate and of two thin plates of bone, set with very slight lateral supports between two strong, bony supports, the palate and base of skull, both of which vary considerably during the years of growth, its most movable part projecting beyond the plane of the face, it is not surprising that this partition-wall of the nares should seldom be found to be symmetrical and in the median line.

The Nerve Connections of the Nasal Chambers.—The sensory nerve supply of this tract comes from the most complicated nerve of the body, the fifth cranial. The filaments terminating in the nasal chambers, from its first and second root, are in most intimate relations with three important nerve centres, where sensory influences come into play with motor and sympathetic. It is also to be remembered that the four ganglia, comprising the entire cephalic portion of the sympathetic, receive their sensory filaments from this fifth nerve, while two of the ganglia—the spheno-palatine and ophthalmic—are in direct communication with the intra-nasal branches of this nerve.

Attempting to outline, very briefly, the nasal *nerve circles*, it is to be noted that from the superior maxillary nerve, two branches pass directly to the spheno-palatine ganglion ; its posterior and anterior dental nerves give filaments to the superior maxillary antra, while the anterior dental nerves cross these antra and give off filaments to the inferior nasal meatus, which, by Bochdalek's ganglion, communicate directly with the spheno-palatine ganglion. From the ophthalmic division of the fifth comes the nasal nerve, which communicates with the frontal by its infra-trochlear branch and sends branches to the ophthalmic ganglion and the ciliary region ; thus it is in relation with the conjunctiva, ciliary region and integument of the forehead and scalp.

The ganglionic connections are most important. The Vidian nerve sends filaments to the mucous membrane covering the roof of the *Posterula*, *i. e.*, the post-nasal arches formed by the posterior superior part of the vomer (its wings) with the vaginal processes of the sphenoid and sphenoidal processes of the palate bone. From the three turbinated bodies, post-nasal space and pharynx, nerve branches pass directly to the spheno-palatine ganglion. By the Vidian nerve this ganglion is in direct communication with the superior cervical sympathetic ganglion through the carotid plexus, and, by the superficial petrosal nerve, with the facial nerve. This superior cervical ganglion of the sympathetic surrounds the internal and external carotids with plexuses, as well as sending filaments to their branches, thus influencing the blood supply which nourishes the tissues of the face, and forms an

important element in the cerebral circulation. Its plexus to the internal carotid —the cavernous plexus—while supplying that vessel, sends filaments to the third, fourth, fifth and sixth cranial nerves, as well as to the ophthalmic ganglion. By its cardiac nerve, the superior cervical sympathetic is in direct communication with the deep cardiac plexus, which is, itself, closely associated with the anterior cardiac plexus and with the close network of nerves which traverse the tissues of the heart. By this cardiac nerve of the superior cervical ganglion, we have an important element of the accelerator apparatus of the heart in communication with the terminal filaments of a sensory nerve within the nasal chambers. It communicates also with the pneumogastric and glosso-pharyngeal nerves. It may be by this path that sensory nerve impulses, resulting from irritation within the nose, cause cardiac palpitation, which is not an infrequent symptom manifested by patients suffering from nasal disease, as well as exciting those attacks of asthma which have yielded only to nasal treatment. With the ophthalmic ganglion, the intra-nasal tissues have sensory nerve connection through the nasal nerve, which there meets sympathetic filaments from the cavernous plexus of the sympathetic and motor filaments from the third cranial nerve. With the otic and submaxillary ganglia, there is no direct communication, except as these ganglia are intimately associated with the third division of the fifth nerve.

Conditions Producing Intra-nasal Pressure.—An abnormal degree of pressure within the nasal chambers results from the contact, at one or more points, of surfaces, which, normally, should be separated by an unobstructed space. This condition is produced by (1) deflections of the nasal septum; (2) exostoses from the vomer or perpendicular plate of the ethmoid; (3) ecchondroses from the triangular cartilage; (4) hypertrophy of one or more of the turbinated bodies; (5) undue prominence of the turbinated bones; (6) temporary congestion, or permanent but varying degrees of engorgement of the blood spaces in the turbinated tissues; (7) neoplasms; (8) foreign bodies.

Symptoms Associated with Intra-nasal Pressure.—The various symptoms of intra-nasal pressure have a certain want of co-ordination, that is hard to account for without taking into consideration the nerve connections and blood supply of the parts involved. In looking over the notes of more than one thousand cases, treated during the last three years at two hospitals, where, besides noting the diseased conditions, an attempt is made to record the patients' symptoms, the writer finds that the symptoms which disappeared after treatment can be generalized as follows:

Excessive muco-purulent discharge from the post-nasal space into pharynx; pain within the nose, with excessive serous or mucous discharge and sneezing; occlusion of the nares; supraorbital pain, associated, not infrequently, with pain at the vertex, occiput, and back of neck; a feeling of discomfort in the eyes, sometimes with lachrymation; cough, often associated with hyperæmia of the vocal cords, but frequently without this condition; infraorbital pain; pain in the ears, due to middle ear catarrh or tubal catarrh (Eustachian); pain in the ears without any visible signs of inflammation; hyperæsthesia of the fauces;

huskiness of the voice, with imperfect action of the adducting muscles (thyro-arytenoid, crico-arytenoid and inter-arytenoid); dysphagia; sensations as of foreign substances in the throat; oppression over chest; palpitation of heart; asthma.

The writer has not found that any of these symptoms were associated, invariably, with pressure at certain definite points within the nares. It has been noted, however, that the most distressing symptoms and, almost without exception, in those cases where sensations were referred to the heart or lungs, there has been found one of two conditions—viz., either myomatous degeneration of hypertrophied middle turbinate bodies, or excess of adenoid tissue in the naso-pharynx. A sharp definition between the "*cough area*" and "*sneeze area*," as distinct pathological tracts, has not been manifested in the writer's experience.

A striking symptom, complained of by a patient now under treatment, is loss of memory and confusion of ideas. The patient is an intelligent woman, and insists that these mental symptoms have existed only since she began to suffer from nasal disease. In this case, the left middle turbinated body had undergone extensive mucoid degeneration, after having been enormously hypertrophied. The left nares was occluded by a polypoid mass dependent from this turbinated body and extending backward into the naso-pharynx. The diseased tissue has been removed, and the patient fancies that her mind "has been clearer;" but it is too early, as yet, to fairly test the degree of improvement, except as shown by relief of headache and of occlusion to the passage of air. Another odd case was noted in a boy, five years of age, from whose right nares the writer removed a shoe-button. For more than a year there had been an offensive discharge from this nares; the child had suffered from headache, and his disposition had undergone a marked change. He had become nervous, irritable and easily excited to anger. The parts healed promptly, after removal of the button, and the child's mother stated, several months later, that the boy had become good-natured and manageable, as he had always been before the existence of irritation in the nose. The button caused no more occlusion or pressure than is often produced by outgrowths from the septum or by hypertrophied soft tissues.

Mental improvement, as well as physical, is frequently to be noted after the removal of "adenoids" from the naso-pharynx. Writers expatiate in most graphic terms on the mental weakness of children having these growths—"stupid expression of face," "dulness of intellect," "great mental deficiency," when compared with children of the same age, who are free from this condition. Such states are commonly observed; but, to one who does not consider the pathological conditions and the anatomical relations of the parts, the claim that these symptoms can be due to pressure and occlusion within the naso-pharynx seems absurd; as a causative agent, the lesion appears totally disproportionate to the phenomena presented. Glandular enlargements at the angles of the jaw and in the neck are very commonly observed in children suffering from hypertrophy of the post-nasal adenoid tissue. The deep lymphatics of this area

follow the course of the internal maxillary vein and artery. In the course of these vessels, lying between the internal and external pterygoid muscles and the external pterygoid and temporal muscles, is the pterygoid plexus of veins, receiving branches from the middle meningeal vein. This chain of lymphatics is only a branch of the same system of deep lymphatics which lie close to the sheath of the carotid artery and jugular vein. It is quite possible that, within the area between the jugular foramen, the carotid foramen and the angles of the lower jaw, part of which space forms the lateral walls of the post-nasal cavity, any glandular enlargements might cause pressure on the internal maxillary, internal jugular and internal carotid arteries and veins, which would interfere with the full and free passage of blood to and from the head. It is a clinical fact that the glandular enlargements at the angles of the jaw either disappear entirely or become much smaller after removal of post-nasal "adenoids" and the free opening of the nares. Is it not possible that removal of pressure from the cervical vessels and those at base of skull may be one of the important elements in producing improvement in the child's mental state?

Another point which suggests the influence of intra-nasal pressure upon the mental state of the sufferer is found in the exaggerated terms which such subjects use in describing their feelings. A polypoid mass, a deflected and occluding septum, a collection of crusts, wedged between and above the middle turbinated body, may be the most striking objects seen at first by the surgeon; but the patient bemoans his "wretched condition," calls it "an awful disease," "no one knows what he suffers," that "life is a burden," he would "do anything to be freed from it," etc. Such depression is manifested very commonly, and not only by weak, neurotic subjects, but by strong, hard-headed business men. The expressions of relief are quite proportionate when the pressure is removed.

These symptoms have occurred within the range of the writer's experience. He cannot lay claim to any more extensive field of reflexes, nor is it to be maintained that every case of cephalalgia, ocular disturbance, dental neuralgias, laryngeal neuroses, cardiac irritation and asthma has the element of nasal irritation among its causative influences, and should be the signal for instituting nasal treatment; but cases do occur possessing such symptoms, which, after long and careful attention applied directly to the functionally-deranged parts, and with the best hygienic and climatic surroundings, have not been relieved until the seat of irritation was found and treated within the nasal chambers. In individuals so constituted that they are subject to "nerve storms" or "nerve exhaustion," a want of balance between inhibitory and excitor centres, there is every reason to avoid abnormal peripheral irritation. Among women and children of this class, the genito-urinary and digestive tracts are carefully searched for the origin of the evil; with men it is apt to be the liver, where treatment tarries long and leaves reluctantly. However, in a country where "catarrhal troubles" are so common as to have been for years regarded as the natural state of the nose, and considering the possibilities of this region for originating reflexes, is it not reasonable that physicians should always make

it their rule to examine the nasal chambers in obscure, neurotic cases where the cause of trouble has not been discovered?

SUGGESTIONS AS TO TREATMENT.—The measures for relief must be selected with regard to the character of the lesion. To *squizzle* various perfumed solutions—sometimes, practically, the same solution with different perfumes—over the mucous membrane of the nares and down through the post-nasal space, may leave a very clean passage for the time being, but it will not correct structural deformity. On the other hand, to relieve the pressure of two opposing surfaces, it is not necessary to saw, chisel, drill, or burn away adjacent parts beyond the seat of pressure, but which may present a mucous covering showing catarrhal inflammation. This catarrhal condition should disappear, after the point of irritation has been removed. It is certainly not necessary to destroy all hypertrophies and exostoses or to straighten every deflected septum. It is the degree of deformity and its effects, the definite lesion associating itself with definite symptoms, that demands attention.

As to tools, anything that can accomplish what the operator desires to do, is in place.

For the removal of bone and cartilage, the writer finds a few fine, thin, but not too flexible saws, or a narrow, flat or curved chisel, about one-fourth inch broad, to be simple, easily managed and perfectly effective.

For clearing away soft, mucous tissue, Farnham's crocodile forceps (there are three sizes), or small, stout scissors with angular handles, or a wire snare are all that is necessary. For the denser, soft tissues, there is no instrument that can compete with the electro-cautery; by its variously-shaped knives, the ability to control the degree of heat, and the almost complete freedom from hemorrhage during its use, the surgeon is enabled to regulate exactly the amount of destruction and confine the field of operation to the limits of disease.

For correcting anterior deflections of the septum, the writer prefers the intra-nasal operation of Dr. Harrison Allen. This consists of the separation of the triangular cartilage from the vomer and anterior nasal spine, pushing it into the middle line, and retaining it, until new union is secured, by a pin or cotton dressing. Similar deformities can also be corrected by Dr. Harrison Allen's supra-labial operation. This procedure has the advantage of being a subcutaneous operation. The frenum of the upper lip is divided, a chisel is passed through the wound, upward and over the crest of the nasal spine, and is then turned inward. A few strokes of a mallet will divide the anterior nasal spine beneath the floor of the nose. The triangular cartilage, being thus rendered movable, can be pushed into the median line and held in place by proper plugs. The writer has performed this operation in only one instance. Occlusion was relieved in this case, and the parts soon healed. For ordinary cases, the intra-nasal operation is sufficient.

The removal of "adenoids" from the post-nasal space is a simple operation, but one best done under ether. There is a large variety of methods and instruments to choose from. We have found the handiest instruments to be fine curettes, or the crocodile forceps, introduced through the nares; their action

being assisted and regulated by the forefinger of the operator's other hand introduced into the post-nasal space through the mouth.

It seems to the writer that experience from work in any specialty should impress the surgeon with the interdependence of anatomical structures, and the absence of fenced fields within the body. It is for this reason that nothing has been said in these very general suggestions about the evil effects of intra-nasal pressure directly upon the respiratory tract and ear, but attention has been confined to those symptoms which bear upon less manifest and recognized conditions.

A CASE OF INCOMPLETE APHASIA, WITH DYSLEXIA AND AGRAPHIA.

By George A. Muehleck, M.D. (Heidelberg),
Of Philadelphia.

J. L., German, 24 years of age, a pocketbook-maker, has father, mother, six brothers and two sisters living and well. No member of the family has ever suffered from any nervous trouble. The patient, with the exception of the usual diseases of childhood, has always been well. No history of syphilis, malaria, injury or of lead-poisoning can be elicited. He is of temperate habits and a very moderate smoker. He is right-handed.

On the afternoon of October 11, 1890, he was suddenly seized with vertigo, pain over the left temporal region and a sensation of fear; perpendicular dark lines appeared before his eyes. In about two minutes he became almost totally speechless. He was capable of uttering a few words only, which he would constantly use when attempting to speak. Consciousness remained unimpaired; he could plainly hear and understand what was said to him, and, with the exception of a few characters, reading and writing were also impossible. The mouth and tongue were not paralyzed, neither was there twitching or weakness of muscles. This attack lasted about two hours and a half, while the pain in the temporal region persisted a few hours longer.

Status presens.—The patient is a strong, healthy man, of good intelligence. Examination of the head reveals nothing abnormal. Heart, lungs and abdominal organs normal; urine neutral, no albumin or sugar, specific gravity, 1020. Patellar reflex normal, with perhaps a slight exaggeration on the right side. No disturbance of sensation; he can stand and walk with eyes closed without difficulty.

He was ordered Fowler's solution, with instructions to keep me informed of his progress.

Two weeks later he had another attack similar in all respects to the previous one. This time I ordered him the bromides and some capsules of nitrite of amyl, with directions to break one in his handkerchief and inhale it whenever he feels an attack approaching. During the next ten days he had two more slight attacks, and the last one also very slight, about four months ago. Since then he has enjoyed perfect health.

Ophthalmoscopic Examination.

Dr. Thomas H. Fenton, who had the kindness to examine the patient's eye-grounds for me, reports as follows:

Optic discs slightly under size and somewhat irregular in outline, but fairly well defined. Some persistent fibres on temporal side faintly showing; absorbing temporal conus. Veins very full in both eyes, especially so in L. E. Vessels seem more "numerous" in L. E. (as well as enlarged). Fundus hyperæmic in both. No marked structural (retinal or choroidal) changes. R., myopic astigmatism; L., hypermetropic astigmatism. Tension normal in both. Absence of any acute inflammatory changes. Vision reduced almost to one-half for distance. Accommodation restricted for near objects (reading). Some insufficiency of internal recti muscles. Field for white almost normal. Field for red is contracted in L. E., and for green and yellow also.

In November, 1890, with minus (concave) cylindrical glass on R. E. and plus (convex) cylindrical glass on L. E., vision is almost up to standard for near and far. Appropriate glasses were ordered for constant wear.

In February, 1891, the hyperæmia (venous) had notably lessened (especially in L. E.); there was increased ability to do near work without discomfort; and vision was quite up to standard (with glasses) for near and far.

The notable points are the evidence of eye-strain; the hyperæmia marked in the L. E. (which was richer in blood supply than the R. E.); the disturbance in the relations in size of veins and arteries to each other; the contraction of the field of vision for colors in the L. E., and the manifest relief afforded by the glasses. It must be borne in mind that he had improved before receiving his glasses, which were ordered on November 26, 1890, one month after the date of his first visit (October 30, 1890).

What is the pathogenesis of this case? In the absence of any personal or family history, which could throw any light upon this question, the differential diagnosis, would, I think, rest between apoplexy, embolism within the area of distribution of the left arteria fossæ Sylvii, tumors, exostoses impinging either directly or indirectly upon Broca's convolution, and functional disturbances—*i. e.*, those depending upon hysteria or those of vasomotor (epileptiform) origin.

Small hemorrhages into the neighborhood of Broca's convolution are sometimes the cause of temporary aphasia, while large extravasations with destruction of the speech centres are invariably associated with other grave symptoms, such as hemiplegia of the opposite side. The same holds true of embolism, and both conditions are very frequently associated with disease of the heart, bloodvessels and kidneys. Aphasia, due to tumors, aneurisms, exostoses, etc., generally keeps step with the advance of the original disease and shows no tendency to amelioration, unless surgical treatment be possible. In considering all the symptoms of this case carefully, I cannot find any evidence of organic disease.

The question whether we may not have to deal with a case of so-called hysteria gravior is more difficult to answer. The entire absence, however, of any "hysterical diathesis" or emotional element, together with the rarity of hysteria in males, I think, justifies me in dismissing this view.

I am much more inclined to believe the attacks to have been of vasomotor origin and probably due to eye-strain, epileptiform in character, in many respects similar to what the French call "*petit mal*," for the following reasons: First, the presence of a distinct aura; second, the suddenness and short duration of the attacks; third, the rapid recovery after the administration of anti-spasmodic

remedies; fourth, the absence of all evidence of organic change in the retina or choroid. Hence the diagnosis would be incomplete amnesic aphasia with amnesic agraphia and dyslexia, the latter also incomplete. As regards pain, my patient located it over the left temporal region, while Gowers in his monograph asserts that the aura in epileptiform aphasia is always spinal, and that pain is always located in the nape of the neck. This statement does not agree with the observations made in this case.

The literature of aphasia and its allied disorders—agraphia, dyslexia, etc.—is very voluminous, but reports of cases of the epileptiform type are not very numerous; and in the literature accessible to me, I was unable to find an exactly similar case—*i. e.*, of vasomotor aphasia with dyslexia and agraphia. F. Bateman[1] reports two cases: The first, that of a healthy miller, 27 years of age, who suddenly experienced pain in the nape of neck, ran out into the street, and became speechless, the condition lasting four days. Five years later, having been perfectly well in the interval, he suddenly became violent, then calm and speechless, and remained so during five weeks, with the exception of two hours. The mind remained clear, no paralysis of lips or tongue existing. Subsequently he had several similar attacks, after which recovery took place.

The second case was that of a man in whom the attacks were preceded by vertigo, but were much shorter in duration, lasting only about three-fourths of an hour. This patient ultimately died of bulbar paralysis. In neither case was agraphia or dyslexia observed. Prof. Bal[2] also describes a number of such cases.

The pathology of aphasia is quite identical with that of the brain and its integuments. A neoplasm, a cyst, an aneurism, an exostosis, a trauma, directly or indirectly involving Broca's convolution, will cause aphasia; as will also syphilis, malaria, Bright's disease, etc. The functional forms of aphasia, or those due to vasomotor disturbances, have no known pathology. They are probably due to a derangement of the sympathetic system, presided over by the cervical ganglion. Aphasia being a symptom, its treatment, of course, must be directed against the exciting cause.

[1] Alienist and Neurologist, St. Louis, 1887, vol. 8, pp. 328 to 340.
[2] L'encephale, Mars, 1881.

THE VALUE OF THE PHYSICAL SIGNS AT THE APICES OF THE LUNGS IN THE SEARCH FOR INCIPIENT PHTHISIS; BASED ON THE STUDY OF ONE HUNDRED HEALTHY SYMMETRICAL CHESTS.

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and
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It is a fact well known to physicians generally that, in health, the percussion-note at the apex of the right lung may be higher pitched occasionally than that of the left apex. This was the belief held by the writers, until the following circumstances were forced upon their attention in the examination of normal lungs at the medical dispensary of the University Hospital, which lead to the belief that the following statements are facts:

(1) In the *great majority* of healthy, symmetrical chests, the percussion-note is higher pitched at the right apex than at the left. (In this series of examination, eighty-eight in one hundred cases.)

(2) That this *variation* in pitch may *equal or exceed* the changes produced by commencing consolidation at this point.

(3) That the tactile fremitus and vocal resonance are *almost invariably increased* at the right apex, this increase being frequently equal to or exceeding that found in commencing consolidation at this point.

It is the object of this paper, not merely to point out the frequency of the occurrence of these phenomena and their possible degree of variation, but to endeavor to show that far too little importance is attached to these three variations in the few text-books where they are mentioned at all, and to point out the class of cases in which these phenomena become misleading factors, if not properly appreciated.

From the days of Auenbrugger, the father of the science of percussion, these variations seem to have attracted no attention, until Flint published his researches in 1856; in a publication of that date he made the statement that "it appears as a general rule that there is a greater degree of resonance with a more vesicular quality and relative lowness of pitch at the left apex." This statement was based on the study of only a few normal chests, in which he found that over half the cases deserved the conclusions quoted. Da Costa dismisses the subject in a few words in the body of a paragraph, in which he says: "On the right side the sound is generally less clear, shorter and somewhat higher pitched than on the left." Bruen, following Flint, reports: "It occasionally happens in the physiological chest that the percussion resonance at the right apex verges toward the vesiculo-tympanitic, or, at least, it is higher pitched than on the left side; it is less significant of pathological condition

than a similar modification over the left apex." Finlayson's "Clinical Diagnosis," "the book of gold," dismisses the subject with the following curt, incorrect statement: "It is also well to remember that, in health, the percussion-note of the left apex, especially in women, is often a little flatter than the right."

With these exceptions we have found no authorities who make mention of the normal higher-pitched note at the right apex. The text-books on phthisis have not been examined, as it is practically impossible to cover them all; undoubtedly few, if any, of these books contain anything on the subject. Hence we claim that no text-book states correctly the frequency with which this phenomenon is found; neither do they show the great degree of variation which can often be elicited, nor attach proper importance to the sign when it does occur. The same statements we believe to be true of increased vocal resonance and tactile fremitus. We present later in the paper the data on which we base our conclusions, the methods used, and the history of typical cases, in which the importance of these variations is supposed to be shown.

IMPORTANCE OF THE DETERMINATION OF THE VALUE OF THESE SIGNS AS REGARDS INCIPIENT PHTHISIS.

When it is taken into consideration that the usual site of tubercular infiltration is at the apex of the lung, and that among the first signs of consolidation of the lung are higher-pitched percussion-note, increased tactile fremitus and vocal resonance, the importance of the determination of the value of these signs is at once apparent. Of course there are other signs of incipient phthisis; one of which, prolonged expiratory effort, is very suspicious of approaching consolidation, and is a phenomenon which is seldom misleading. It is in those cases where these other signs are absent, masked, or very slight that these variations spring into greater prominence. Again, undoubtedly, the higher-pitched note when existing normally at the right apex is perfectly resonant; it lacks the deadened quality noticed in commencing consolidation. Yet this difference in quality is hardest to distinguish in just those cases where the greatest doubt exists, so that practically this difference is of no use. It is of the utmost importance that signs which are perfectly normal should not be mistaken for those of diseased conditions; on the other hand, it is equally important that we do not overlook diseased conditions at either apex, considering the signs as those of health. In the incipient stage of phthisis, so vital is the diagnosis for the future of the patient and so slight are the symptoms and signs, that every straw adds weight to the conception of the case. A positive diagnosis is demanded by patient and as eagerly sought by physician. The disease is presented in its incipient stage oftener to the practitioner than any other disease, as its symptoms and results are so well known to the laity. Hence in the majority of normal lungs we have conditions which at once add suspicion to our conception of cases in which incipient phthisis is feared.

Long before a tabular list was made of the examinations of normal lungs, these variations had forced notice; a long-continued observation of such cases led to a systematic examination of the subject. A list of one hundred cases is appended, taken as they presented themselves at the dispensary. The diseases for which they were treated had no influence on the condition of their lungs.

TABULAR LIST OF THE CONDITION OF THE PERCUSSION-NOTE, VOCAL RESONANCE AND TACTILE FREMITUS IN ONE HUNDRED HEALTHY SYMMETRICAL CHESTS.

Number of Case.	Sex.	Age.	Percussion-Note at Right Apex.	Vocal Resonance at Right Apex.	Tactile Fremitus at Right Apex.
1	M.	60	Higher pitched.	Slightly increased.	Slightly increased.
2	F.	50	" "	" "	" "
3	F	21	" "	" "	" "
4	F.	31	" "	" "	" "
5	F.	57	Both apices the same.	Not taken.	Not taken.
6	F.	26	Slightly hig'r pitch'd.	" "	" "
7	M.	22	" " "	" "	" "
8	F.	49	" " "	No difference.	Slightly increased.
9	F.	19	Higher pitched.	Increased.	Increased.
10	F.	28	Slightly hig'r pitch'd.	"	"
11	F.	28	" " "	Slightly increased.	Slightly increased.
12	F.	39	Both apices the same.	No difference.	No difference.
13	M.	22	Higher pitched.	Increased.	" "
14	M.	40	Both apices the same.	No difference.	Increased.
15	M.	22	" " "	" "	No difference.
16	M.	16	Higher pitched.	Increased.	Increased.
17	M.	50	" "	"	"
18	M.	33	Both apices the same.	Not taken.	Not taken.
19	M.	36	" " "	No difference.	No difference.
20	F.	38	Higher pitched.	Not taken.	Not taken.
21	F.	10	" "	" "	" "
22	F.	54	Slightly hig'r pitch'd.	" "	" "
23	M.	25	Higher pitched.	No difference.	Increased.
24	F.	26	" "	Increased.	"
25	M.	24	" "	"	"
26	M.	32	Slightly hig'r pitch'd.	Slightly increased.	Slightly increased.
27	M.	31	Higher pitched.	Increased.	Increased.
28	M.	24	" "	"	"
29	F.	20	Slightly hig'r pitch'd.	"	"
30	M.	43	Both apices the same.	"	"
31	M.	33	Higher pitched.	"	No difference.
32	M.	17	" "	"	Increased.
33	F.	20	" "	No difference.	No difference.
34	M.	17	Both apices the same.	Increased.	" "
35	M.	32	Higher pitched.	"	Increased.
36	M.	13	" "	"	"
37	F.	20	" "	"	"
38	M.	60	" "	"	"
39	F.	33	" "	"	"
40	M.	16	" "	"	"
41	M.	23	" "	"	"
42	M.	21	" "	"	"
43	M.	51	" "	No difference.	"
44	M.	51	" "	Increased.	"
45	M.	66	" "	"	"
46	M.	22	" "	"	"
47	M.	39	" "	No difference.	"
48	M.	61	" "	Increased.	"
49	M.	24	" "	Slightly increased.	Slightly increased.
50	M.	15	Slightly hig'r pitch'd.	Increased.	No difference.
51	F.	34	Higher pitched.	"	Increased.
52	F.	30	" "	"	"
53	M.	42	Both apices the same.	Slight increase.	Slight increase.
54	M.	57	Higher pitched.	" "	No difference.
55	M.	69	Higher at left apex.	Not taken.	" "
56	F.	25	Higher pitched.	Increased.	Increased.
57	F.	29	" "	"	"
58	F.	27	" "	"	"

Number of Case.	Sex.	Age.	Percussion-Note at Right Apex.	Vocal Resonance at Right Apex.	Tactile Fremitus at Right Apex.
59	F.	16	Slightly hig'r pitch'd.	No difference.	Slight increase.
60	F.	53	Higher pitched.	Increased.	Increased.
61	F.	28	" "	"	"
62	M.	28	" "	"	"
63	M.	30	Slightly hig'r pitch'd.	Slight increase.	Slight increase.
64	M.	24	Higher pitched.	Increased.	" "
65	M.	59	" "	"	" "
66	M.	30	" "	"	" "
67	M.	25	" "	"	" "
68	F.	20	Slightly hig'r pitch'd.	"	" "
69	M.	25	" " "	"	Increased.
70	M.	20	" " "	"	"
71	M.	26	Higher pitched.	"	"
72	F.	42	" "	"	"
73	F.	35	Same note both apices.	"	"
74	F.	21	Higher pitched.	"	"
75	F.	25	Same note both apices.	"	"
76	M.	50	Higher pitched.	"	"
77	F.	35	" "	"	"
78	M.	38	Slightly hig'r pitch'd.	Slight increase.	Slight increase.
79	M.	35	Higher pitched.	Increased.	Increased.
80	M.	34	" "	"	"
81	F.	23	" "	"	"
82	M.	44	Slightly hig'r pitch'd.	"	"
83	M.	39	Higher pitched.	"	"
84	F.	20	Very slightly higher pitched.	Slight increase.	Slight increase.
85	M.	22	Very slightly higher pitched.	" "	" "
86	F.	39	Higher pitched.	Increased.	Increased.
87	M.	29	" "	"	Increased at left.
88	M.	55	" "	"	Increased.
89	F.	16	" "	"	"
90	M.	50	" "	"	"
91	M.	23	" "	"	"
92	M.	80	" "	"	No difference.
93	F.	24	" "	"	Increased.
94	F.	17	" "	"	"
95	F.	24	" "	"	"
96	F.	45	" "	"	"
97	F.	48	" "	"	"
98	M.	23	" "	"	Slightly increased.
99	F.	48	" "	"	Increased at left.
100	M.	47	Slightly hig'r pitch'd.	Slightly increased.	Increased.

In examining this table, consisting of the reports of the condition of 58 men and 42 women, we find that 11, or 11 per cent., have the same percussion-note at both apices; 19, or 19 per cent., have slightly higher-pitched note at the right apex, and 69, or 69 per cent., have markedly higher-pitched note at the right apex, while one was higher pitched at the left apex. In the 92 cases where vocal resonance was taken, 10 showed no difference at the apices; 14 showed slight increase at the right apex, and 68 marked increase. In 93 cases where the tactile fremitus was taken, no difference was found in 11 cases, slight increase on the right side in 20, while 60 showed marked difference. Two cases exhibited marked increase of fremitus at the left apex.

In pursuing the examination, as far as possible, the results were obtained separately by each observer, compared and then obtained together. Many cases where slight variation occurred were verified in this manner; one observer percussed the chest, while the other listened in such a position as to be unable to tell which apex was being percussed. Any case in which there was any difference of opinion as to the existence of any variation was put down in the lists as equal on both sides. All the ordinary rules of percussion and auscultation were observed. There was no desire to force cases into one class or the other; the attitude was simply to endeavor to find the exact truth on the subject.

Supposing a case to present itself with higher-pitched percussion-note, increased tactile fremitus and vocal resonance, at the right apex, the question of course arises whether this is a diseased condition. One of three errors may be made:

(1) A normal condition at the right apex may be considered a diseased condition.

(2) A diseased condition at the right apex may be considered normal.

(3) The normal disparity in favor of the right apex may mask diseased conditions at the left apex.

That it is possible for these errors to occur, the following three cases are cited, taken from the case-books of the dispensary:

CASE I. *Normal condition at the right apex considered diseased.*—Mrs. F., Jewess, aged 30, has good family history. Always well until within a few weeks before presenting herself at the dispensary. She was nursing an infant. Had a bad cough, with muco-purulent expectoration. She had lost flesh and strength, being very pale and emaciated. Night-sweats were also present. There was very marked higher-pitched percussion-note at the right apex, with increased tactile fremitus and vocal resonance. Expiration was *not markedly prolonged.* The sputum was examined and found negative. The case was looked upon as, in all probability, one of phthisis. The child was weaned and patient put on nutritious diet and tonic treatment. Rapid improvement followed, and to-day, six months after the first examination, she is in perfect health, with a total disappearance of all symptoms. The difference between the two apices is still as marked; it is undoubtedly a normal condition.

CASE II. *A diseased condition at the right apex considered normal.*—Johanna W., aged 24. Good family history. She was perfectly well until the flood at Johnstown, May, 1889. At this time she was exposed to the fury of the flood for eighteen hours, spending that terrible night on the house-tops. In October, 1889, she presented herself at the dispensary, complaining of slight cough and excessive loss of flesh. There were no other symptoms, although the patient weighed eighty-four pounds, while at the time of the flood she weighed 119. Careful examination of the chest showed only slight impairment of percussion-note at the right apex with slightly increased vocal resonance and tactile fremitus. On a tonic treatment, the patient improved and finally became apparently well. In March, 1890, she presented herself with the history of excessive cough, lasting for two weeks. There was again much loss of flesh; the temperature ranged from 99° to 101°. There were night-sweats and all the signs of commencing tuberculosis. Tubercle bacilli were found in the sputum. Examination of the chest showed very slightly higher-pitched note at the right apex, with scarcely any difference in tactile fremitus and vocal resonance. Numerous râles were found over the whole chest, sibilant and mucous. The expiration was slightly prolonged at the right apex. Gradually the râles over the left chest and base of the right

disappeared, but dulness gradually increased at right apex and blowing breathing appeared. As the case progressed, no doubt could be entertained that complete consolidation of the right apex had occurred. Despite the most careful, repeated examinations, several months had passed before a positive diagnosis of consolidation of the right apex could be made.

CASE III. *The normal disparity in favor of the right apex masks beginning consolidation at the left apex.*—John S., aged 27; shoemaker. Good family history. Always in good health until February, 1890, when he caught a severe cold. On examination, he stated he had lost thirteen pounds in weight, was troubled with hectic fever, persistent cough, with muco-purulent expectoration and night-sweats. There was higher-pitched percussion-note with increased vocal resonance and tactile fremitus at the right apex, with a few sibilant râles at the left apex. Bacilli were found in the sputum; temperature was 100°. For several weeks, the physical signs remained the same; gradually, however, it was noticed that the expiration was more prolonged at the left apex, and finally the percussion became higher pitched at the left apex; fremitus and resonance increased on that side compared with the right apex, and all doubt as to the seat of the lesion was at an end. The signs at the left apex are those of consolidation, while the right apex remains exactly in the condition as seen at the first examination. Certainly it was impossible to determine the seat of the lesion for some weeks after the first examination.

Undoubtedly it requires a certain degree of training and experience to bring out fully any variations which may exist. There are differences in the note of the two apices which scarcely anyone would overlook; but, on the other hand, it requires delicate care to distinguish in a certain proportion of cases. Flint's experience in this point will serve as an example. In 1852, he stated in a prize essay that the examination of apices in normal cases showed no especial variation between their percussion-notes; his conclusions reached in 1856 contradict his previous statement. He attributes this to the fact that in 1856 he examined his cases with a greater degree of precision and skill than he had used in previous trials. Flint's examinations, mentioned at the commencement of the article, were unknown to the writers when they were investigating the subject; the discovery of their existence was a gratifying confirmation of the data obtained independently, although Flint makes no especial use of the conclusions in practical medicine, and his data published are so meagre that they scarcely carry out his statements.

CAUSES OF THESE NORMAL VARIATIONS.

It is accepted by physical diagnosticians that the larger size of the right bronchus accounts for the increase of vocal resonance and tactile fremitus, both being due to the same cause—increased transmission of the voice sounds. As to the reason of the higher-pitched percussion-note at the right apex, there is less clear and united opinion. The note at the left apex ought, if anything, be the higher pitched; the explanations of the contrary conditions existing are not satisfactory. One explanation is that the liver at the base of the right lung deadens the wave sounds from the tissue above, while the hollow viscus, the stomach, serves more as a sounding-board for the left lung. The degree of tension of the thoracic parieties and of the lung tissue itself may account for it, as the greater the tension, the higher the pitch.

In conclusion, we would repeat:

That higher-pitched percussion-note, increased vocal resonance and tactile

fremitus are normal at the apex of the right lung as compared with the left; that this normal condition can occur in such a number of cases and to such a degree as to cause in many instances a diagnosis of consolidation at the right apex; that finally, in deciding doubtful cases, other signs besides these three are necessary to formulate a diagnosis; continued observation of cases where other signs are lacking being necessary to watch the possible development of actual disease.

MEMORANDA.

A CASE OF REMARKABLE SURGICAL INTEREST.

THE following case was communicated by letter from Dr. W. W. Stennett, of the Chicago and Northwestern Railroad, to Dr. Edward H. Williams, of the Baldwin Locomotive Works, and is well worthy of being recorded in the UNIVERSITY MEDICAL MAGAZINE:

A switchman in a retired part of one of the yards of the Chicago and Northwestern Railroad picked up the arm of a man which had been crushed off at the shoulder joint and having on it a shirt sleeve. Diligent search was made for the owner of the lost member, but nowhere could he be found, nor could any clue to the accident be discovered. Five days after the accident the police found the man at Clyborn, five miles from the scene of the injury, exhibiting his mutilated shoulder in proof of his arm having been cut off by a train. This exhibition he had made in twenty or thirty saloons for the purpose of obtaining whiskey. During all the time no dressing had been applied, or any vessels tied. He was sent to a hospital and recovered perfectly. On examination it was found that the arm had been torn out of its socket, leaving the other elements of the shoulder, the clavicle and scapula, intact.

The forcible ablation of an arm has often occurred by machinery without any serious loss of blood, but the shock usually renders the patient helpless, and the surgeon invariably feels it his duty to ligate the crushed vessels. The marvel, however, in this case, was in the ability of the man to travel about for five days, realizing neither shock nor bleeding. It is not improbable that had one or two days more elapsed without a dressing, fatal bleeding would have ensued from sloughing of the crushed vessels, such sloughing often being delayed as late as the seventh day.

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A SEVERE CASE OF EPILEPSY; OPERATION; APPARENT RECOVERY.

THE following case is interesting on account of its long standing, the severity of the attacks, and the prompt relief following operation. The history is as follows:

R. W., aged 20, white, born in America, residence Waverly, single, and by occupation a blacksmith. Father and mother died when he was quite young; both had been healthy previous to their last illness. At the age of five years, while standing by a well, where some machinery was in motion, he was struck on the back of the head by a windlass. He was taken home unconscious, being confined to the house for some weeks. He did not remember whether his skull was fractured or not. (The operation proved such to have been the case.) On recovering from the injury, he was perfectly well for nearly two years, when he was suddenly seized with a violent convulsion, lasting some time. He had no more trouble for three weeks, when a second attack occurred, from which he emerged only to pass into a third, and from this to others in rapid succession. The attacks continued to increase in frequency and in severity, with now and then a week or two of freedom. Treatment seemed to give no relief at all; and in the hopes of being benefited, he went to New York and put himself under the care of a specialist, who treated him for nearly a year, not benefiting him, beyond giving periodical relief. Getting discouraged, and having used up what means he had, he applied for admission to the hospital in Rochester; this was in 1889, nearly fifteen years after the injury was received.

While in the hospital, the attacks were so violent that he was fastened to the floor, in order to restrain him, and he seemed to get worse each day. He called attention now to the blow he had received years before and asked for an operation. It was refused, and he was informed that the blow *had not* caused his condition, being told that he was incurable. He left the hospital, and drifted about, seeking work; he would get employment, only to be dismissed because he had "fits." He finally drifted into Wilkes-Barre in 1891, and at the time had not been having many severe attacks.

In February, after escaping an attack for three weeks, he thought his chances good for getting into this institution, and applied for admission, under the plea of *rheumatism*, of which he presented the symptoms. He was admitted on February 20th, and on the next day he had a severe convulsion, requiring six men to hold him. I gave him inhalations of chloroform, which soon quieted him, but in a few hours he went into another, without warning, and from this to a third, fourth and fifth, horrible to witness. His eyes seemed to start from their sockets, the body would be arched, and then thrown violently backward and forward; severe spasms of legs and arms then followed, while his jaws opened and closed like a steel trap, lacerating his tongue and cheeks. A large amount of chloroform was required to quiet him, but he finally fell into a deep sleep, and awoke ignorant of what had happened. At times he had an aura, but usually no warning of the attack was given.

A physical examination showed him to be remarkably sound and of powerful build. The occipital bone was quite prominent, and there was a slight depression just below the junction of the sagittal and lambdoidal sutures. During the ten days following his admission he had from ten to thirty-five attacks every twenty-four hours. The spasms usually followed each other in rapid succession, and on several occasions they took place when he was asleep; in one of them he tore a canvas jacket as if it had been made of paper. Large doses of bromide of potash, 300 to 480 grains, were given in twenty-four hours. Then the combination of the bromides of potash, sodium and ammonium, with the fluid extract of ergot, was tried in large amounts, but with little or no effect. The bromides were then stopped, and he was put upon the tincture of veratrum viride in doses of ten drops *every hour*. This was kept up for nearly two weeks, and with great success, the spasms being reduced to three in twenty-four hours, and in several days he had only one. His condition was excellent, the pulse being full and strong, and averaging sixty to eighty beats a minute.

He now called attention, for the first time, to a *severe pain* in the back of his head occurring *after* each convulsion, and located in the region where he was injured long ago. He begged for operative interference and said he preferred death to his present condition.

On March 14th chloroform was administered and the operation performed by Dr. G. W. Guthrie. A large flap was raised over the site of the old injury and the trephine applied; a button of bone was removed, which on its under surface showed marked evidence of an old fracture. Two more buttons were removed, and each showed the same condition, though

in a less degree. The dura mater was somewhat congested and showed signs of pressure. A small drainage tube was inserted and the wound closed. Patient was given morphia, gr. ¼, hypodermically. He rallied nicely from the operation. The next day he had a slight twitching, but no spasm. The drainage tube was removed in twenty-four hours. On the 16th of March he had three slight spasms, lasting a very short time, and requiring no restraint. No medicine was given after the operation, save one dose of bromide of potassium, 30 grains. On the 18th union was perfect, stitches were removed, and collodion and iodoform applied over line of incision. Temperature has not been above 99° since operation. Patient allowed to get up and go about the wards on the above date (18th).

On April 4th he was asked to do some light work in his ward; he refused to comply (his gratitude not being sufficient to enable him to appreciate what had been done for him), and he was promptly discharged from the hospital. Up to the day of dismissal he had not had a single bad symptom and said he had not felt so well in ten years. He has probably been benefited greatly, if not entirely cured.[1]

This is the second case in which Dr. Guthrie has trephined for epilepsy, in which a fracture of the skull was the cause. The first case, operated on in February, 1890, was cured and has not had any convulsions for a year, except *three*, coming on a few days after the operation. The operation is certainly indicated, where the history of an injury—followed by convulsions—is as clear as in the case reported, and if a *positive cure* be not obtained, *relief* is almost certain to follow.

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WILKES-BARRE, PA.

REPORT OF A CASE OF POISONING BY EUPHORBIUM AND ONE OF QUININE AMBLYOPIA.

THE following cases are of interest, as presenting unusual susceptibility to the action of euphorbium and quinia sulphate:

A. B., aged 35, an extensive horticulturist, while sorting several species of euphorbia, was suddenly seized with a severe burning in the outer canthus of the right eye, which gradually became diffused over the whole conjunctiva; this was attended with an increase in the lachrymal secretion. The irritation, at first localized, became general; the cheek, in the course of an hour, became greatly swollen. The buccal and nasal secretions at first were greatly increased in quantity; but the mouth, nose and fauces, however, soon became dry. The intense burning in the eye extended to the cheek, mouth, nose and fauces, and was at first apparently confined to the distribution of the trigeminal nerve. Sneezing became an obstinate symptom, and the right side of the face became greatly swollen. There was no notable effect upon the pulse, respiration or bodily temperature, though locally about the face, the temperature was above normal. Upon the genito-urinary tract, its action was prominent; constant desire to urinate was noted, which lasted for several hours through the night. Microscopical and chemical examination of urine was negative. When called to see the

[1] It is over eight weeks since the operation reported above was performed, and a few days ago I heard from the man. He has been perfectly well since leaving the hospital, is working hard every day, in the lumber regions of New York State, and said he has not felt so well in years. I think there is every reason to believe that he has been cured, and certainly the relief has been marked, considering the length of time he was subject to the attacks. Before leaving the hospital, he was shown before the Luzerne County Medical Society, and a brief account of the case was given.

patient, most of the constitutional symptoms had disappeared, with the exception of some dryness of the throat. The inflammation of the conjunctiva was still marked; this was treated with hot compresses, for five minutes every two hours. Atropia (gr. i to f℥i) gtt. i. once a day and a wash of boracic acid (gr. xv. to f℥i) every fourth hour were ordered.

The gentleman under treatment is an extensive horticulturist, and attributes the attack to rubbing accidentally his eye, after handling the plant, in his conservatory. I have since spoken to several botanists, none of whom have ever met with the misfortune of being poisoned. The case is probably one presenting an unusual susceptibility, as the gentleman was similarly affected by allowing some of the milky secretion, which exudes from cacti when cut, to come in contact with the tip of his tongue some years ago. At that time the gastro-intestinal symptoms were more violent.

The severe symptoms encountered in this case should caution those who are in the habit of handling the plant, and especially those who have charge of the preparation of the various species for medicinal use.

The following case of quinine amblyopia is interesting, as presenting one of unusual susceptibility:

J. A., aged 30, presented himself for treatment with urethal stricture; he was ordered pil. quininæ sulph. gr. ij thrice daily after meals, preparatory to an urethral examination. He has incipient phthisis; physical examination in other respects was negative. He returned the day after the drug had been prescribed, stating that he could not take the pills, as they made him blind. Shortly after taking the first dose, he was unable to read the newspaper. He had been a moderate user of tobacco, but has not used it for some time on account of a pharyngitis, which is aggravated by its use. No history of alcoholic excess and no specific history exist. He was placed on restricted diet, all alcohol and tobacco were stopped, and he was kept under observation for two days, when a second prescription was ordered, and a second pill of quinia was administered with the same effect as the first, which symptom disappeared in less than two hours. A third trial was made with the remedy, with the same effect, when the drug was stopped. Now, two weeks later, he has had no return of the symptom.

The case is of interest as presenting an unusual idiosyncrasy to so small a dose of quinia.

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237 SOUTH 13TH STREET.

A CASE OF ACNE OF UNUSUAL SEVERITY AND EXTENT, WITH SOME REMARKS UPON TREATMENT.

THE case of acne here reported and shown in the accompanying illustrations is noteworthy because of its severity, the great number of the lesions, and the extent of surface covered by the eruption.

The patient was a young man, 22 years of age, a laborer, and, with the exception of the cutaneous disease, apparently in excellent health. The eruption began, one year ago, upon the face; but at the time of the examination, this locality was almost entirely free, showing at most a few small papules. The trunk, however, was thickly covered with lesions of various

sizes and in all stages of development. Upon the chest, the eruption was composed of lesions varying in size from a large pea to a hazel-nut, dark red or livid in color, painful to the touch, many of the larger ones containing considerable quantities of pus. Interspersed among the acne papules and pustules were numerous comedones, many of them being of extraordinary size. As the result of the violent inflammation, the skin was markedly

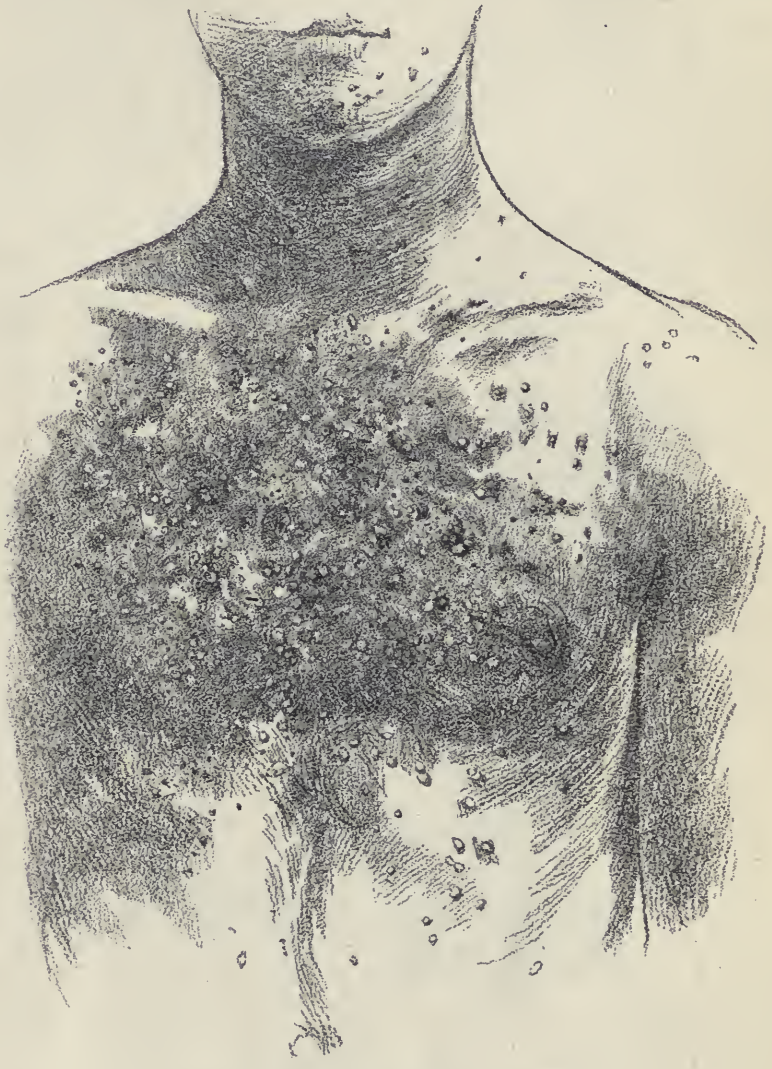

PLATE I.—FRONT VIEW.
Case of acne of unusual severity and extent.

scarred, some of the cicatrices being as large as a dime, and showing a tendency to keloidal formation. At a little distance, the eruption did not look unlike a syphilitic one; but a closer inspection revealed at once its true nature. Upon the back, the disease was even more extensive than upon the chest; but the lesions here were much smaller and far less inflammatory, with little or no scarring. As shown in the illustration, the number of comedones

was countless, giving the skin a peculiar, speckled appearance. The patient was given the following ointment, with directions to rub it in thoroughly every night, and to wash it off every morning with hot water:

℞. Sulphur. præcip.,
Saponis virid., ... āā ℥ij.
Petrolat., ... ℥ss.
M.
Sig. Apply with friction at night.

PLATE II.—REAR VIEW.
Case of acne of unusual severity and extent.

As the patient failed to return, the result of this application is not known; but, as a rule, it is just in these severe cases that the best and speediest results are obtained from a properly directed treatment. A rapid improvement may be much more confidently expected in such cases than in milder ones with few and small lesions. Notwithstanding the markedly inflammatory character of the eruption, stimulating applications do far better, in the majority of cases, than

mild ones; and an ointment, such as the one just prescribed, will often produce considerable improvement within a comparatively short time.

Besides sulphur, which is, perhaps, the most valuable remedy in acne, resorcin, in an ointment of ten to fifteen per cent. strength, oftentimes is extremely useful; but as it is capable of exciting considerable inflammation, it should be employed with some care, the patient being directed to suspend the application if the skin should become unduly inflamed.

Internally, besides laxatives, which are so frequently demanded because of the constipation present, cod-liver oil is often of signal benefit, especially in those cases where, with a dull, pasty complexion, the lesions are large, livid and sluggish. Sulphide of calcium, which has been so often and so much praised in suppurative processes, has not, in the writer's hands, maintained its reputation. Indeed, it has been found nearly or quite useless, although tried abundantly in every variety of the disease when it seemed indicated.

Far more important than the internal administration of drugs is the regulation of the patient's diet. Unless this is carefully attended to, no real progress toward a permanent cure can be expected.

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CLINICAL DEPARTMENT.

PHILADELPHIA HOSPITAL.

TWO CASES OF TUBERCULAR MENINGITIS.

[Service of Dr. W. E. HUGHES.]

CASE I.—Henry R., white, aged 25, cigarmaker by occupation, admitted January 7, 1891. Father died of pneumonia: mother died in confinement. No history of tuberculosis in family. He has always enjoyed good health. He has had chancroids, but no specific history. For past eighteen months he has had a cough and has been losing flesh. On admission he showed marked signs of phthisis at left apex with some consolidation at right apex. Later the râles extended over entire left lung. Patient was considerably emaciated.

During the day of March 9, 1891, patient seemed dull and slept a great deal. He had a sensation of being pricked by pins over entire left side. Body was much more emaciated on left side. The pain in head and back of neck was very severe. At 10.30 P.M., March 9, 1891, patient had a convulsion which lasted several minutes. He was not seen at beginning of convulsion. When seen by nurse, the convulsion was general, but more marked on left side, patient being unconscious.

The plantar reflex was found much exaggerated on left side; the patellar reflex somewhat increased on left side, but no ankle clonus. Cremasteric and epigastric reflexes were normal. Left side was somewhat hyperæsthetic, otherwise sensation was normal. The emaciation of left side is very much more pronounced than on right side. The dynamo-

meter registers 16 in the left hand, and 35 in the right. The force of flexion with extension of both forearm and leg is much less on the left side. Pupils are equal and respond to light.

March 10, 1891. Patient seemed dull all morning and had considerable difficulty in speaking. About noon he suddenly became very pale and seemed to be unable to appreciate what was said to him. This condition lasted for about two minutes, when the muscles of the angle of the mouth on the left side began to twitch, and then all the muscles of the left side of the face. The spasm extended to the muscles of the neck, the head being drawn to the left. Then followed the left arm and left leg, and the convulsion became general, but was much more marked on the left side. The convulsion lasted about three minutes, and with it there were frothing at the mouth and biting of the tongue. Immediately after the convulsion the temperature in the left axilla was 97.4° F., and in the right axilla 99.2° F. The patient slept for several hours after the convulsion. Patient said that the pricking sensation of left side was much worse immediately before the convulsion.

During the afternoon the patient had another convulsion, but was not under observation. Patient slept very poorly, complaining of intense pain in head, especially in frontal and occipital regions. The left pupil was slightly dilated and tongue drawn to the left.

March 12, 1891. At 5 A.M. patient had another convulsion, beginning in left side of face and proceeding as did the one above described. Following this convulsion the temperature was 4° F. higher in right axilla than in left. Pupils were equal. No ptosis existed. Pain and difficulty of speech persist.

March 20, 1891. Patient was very dull, being scarcely able to speak at all. During evening there was first noticed a complete loss of power of right side with a total loss of speech, although patient seemed to appreciate all that was said to him. Both eyes were drawn markedly to right, but could be brought back again to median line.

March 20, 1891. Condition worse. Internal squint of left eye noticed. Complete loss of power of right side. Dynamometer only registers six in left hand. There is carphologia (with left hand), the movements being athetoid in character at times. Patient died March 21, 1891.

This patient said that one year ago, while in St. Agnes' Hospital, he momentarily lost consciousness, but, other than this, never had any convulsions before the evening of March 9, 1891.

AUTOPSY.

Lungs.—Left lung infiltrated with tubercles. Upper lobe honeycombed by cavities. No cavities found in lower lobe, but marked consolidation. Right lung is infiltrated and contains few small cavities, middle lobe one cavity, and lower lobe has tubercles scattered through it.

Heart.—Small, weighs seven ounces. No valvular lesion.

Liver.—Weighs five pounds, nine ounces. Section firm, mottled and glistening. No amyloid reaction.

Intestines.—Normal. Left supra-renal capsule twice as large as normal. Section normal.

Kidneys.—Each weighs seven ounces. Mottled surface. Kidney much congested. Capsule adherent.

Brain.—Abnormal amount of cerebro-spinal fluid. Membrane at base opaque, filled with gelatinous fluid, and contains numerous tubercles along the Sylvian fissure. Surface of cortex of right island of Reil is hard and contains immensely dilated arteries, giving porencephalic appearance. Ventricles dilated. No other lesion.

CASE II.—Mary R., black, aged 21, single, domestic. Father died of typhoid fever. Mother living and well. Three brothers are dead, cause unknown. Four sisters living.

Patient always enjoyed very good health. Menstruated at 15. She had been working as domestic until four days before admission. Eight days before admission began to feel very weak, with frontal headache and severe pains in eyes and about neck and back, with loss of appetite. These symptoms grew worse and compelled her to stop work March 24, 1891.

On admission, she complained of pain in head and back of neck, pain in eyes, increased by pressure, anorexia, constipation and great prostration, tongue heavily coated. Few moist râles at upper part of right chest. Heart's action was rapid. From the character of the pains the patient was at first thought to be suffering from influenza. The pain in head and neck increased. There was rigidity of muscles of neck. There was a general hyperæsthesia, much more marked about head and neck, so much so that patient cried out when touched in this region. The temperature on admission was 102° F., and continued about this height. The pain in head grew steadily worse. The pupils reacted to light. Marked photophobia existed. This condition lasted several days, when the patient became delirious. The delirium lasted about twenty hours and was followed by stupor. As there were abundant hyaline and few granular casts, patient was purged freely, free diuresis established and sweating promoted. The stupor disappeared, leaving patient clear mentally, but the delirium returned in less than twenty-four hours. The râles extended through the chest. This condition persisted, delirium and coma alternating; great hyperæsthesia, spastic condition of muscles of neck, and at times nystagmus were present. Patient died in coma, April 5, 1891.

AUTOPSY.

Lungs.—Right lung—well-marked consolidation of lower lobe, with some in upper lobe. Numerous tubercles throughout, especially along the edge. Left lung—no marked consolidation, but same character of miliary tubercles. No cavity in either lung.

Heart.—Normal in size. Slight thickening of mitral valve.

Kidney.—Chronic parenchymatous nephritis.

Spleen.—Remarkably small.

Intestine.—Slight gastro-enteritis, non-tubercular.

Liver.—Normal.

Brain.—Congested. Chicken-fat clot in longitudinal sinus. Marked tubercular meningitis at base, with gelatinous exudate. Tubercles extend from middle of cerebellum to olfactory bulbs and follow the course of middle cerebral artery. Membranes thickened.

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EDITORIAL.

OPERATIONS UPON EYES BLINDED BY SYMPATHETIC OPHTHALMITIS.

THE treatment of sympathetic ophthalmitis, when once the disease has fully matured, and the management of an eye so injured that it is liable to produce implication of the fellow-eye, are problems in ophthalmic surgery which do not admit of answers according to set rules. Certain it is that at the present time injured eyes, and with the injury involving the "dangerous zone," are sometimes saved that in former days would have been sacrificed. Careful disinfection of the lips of the scleral wound, accurate adjustment by means of scleral or conjunctival suture, antiseptic cleansing of the conjunctival cul-de-sac, and perfect rest secured by means of a suitably applied compressing bandage are the measures most likely to meet with success in the attempt to save an eye affected with a perforating injury, provided none of the conditions which preclude the propriety of such attempt are present. These conditions usually are stated somewhat as follows: Extensive injury of the ciliary region immediately destroying sight; injury of the ciliary region already associated with severe inflammation of the uveal tract, even if vision remains; injury of an eye by a foreign body, the latter remaining lodged within the globe after all judicious efforts have been made to extract it; and injury to an eye in the dangerous region, causing early and repeated sympathetic irritation in the fellow-eye.

Practically, however, the attempt to save an eye by scleral suture would be done only in quite recent wounds, and in those in which no suspicion of the entrance and lodgment of a foreign substance within the eyeball could be entertained.

When sympathetic inflammation actually has arisen, the treatment of the injured or "exciting" eye and of the "sympathizer" has called into service various plans, although practically all surgeons are agreed that no operation must be performed upon the sympathizing eye during the stage of active inflammation, save only if acute glaucomatous tension arises, when this may be relieved by scleral puncture. The ultimate outcome of an eye affected with sympathetic ophthalmitis is either recovery with useful vision, shrinking and atrophy, or closure of the pupil by extensive annular synechiæ, atrophy of the iris and opacity of the lens, a condition sometimes called anterior phthisis.

It is to the proper treatment of eyes affected in the manner last named that J. B. Story (*Ophthalmic Review*, March, 1891) addresses himself. An eye of this character presents a partially atropic, somewhat cicatricial iris, an opaque lens and thickened capsule, a probable fluid vitreous, and, it may be, changes in the choroid and retina. In other words, eyes of this type are very "vulnerable" and are liable to do badly during operative interference. This interference has consisted of (*a*) iridectomy—a method which has often been tried and almost invariably has proved unsatisfactory, owing to the impossibility of obtaining a satisfactory coloboma; (*b*) extraction combined with iridectomy, according to a variety of methods, which attracts the dangers of free hemorrhage from the iris, considerable reaction, and extensive loss of vitreous; and (*c*) the method of the late Mr. George Critchett, which consisted in incising the anterior capsule of the lens with one or two cutting needles and allowing the escape of some disorganized lens material, the operation to be repeated as many times as necessary after the irritation of each performance had subsided. Story points out that some text-books describe this method erroneously by stating that the needle should pass through the iris as well as the lens capsule, although Mr. Critchett was careful to avoid the iris during his manipulations. The method is especially suitable for young eyes; indeed, as Story remarks, commonly young eyes alone are suitable for operation after the subsidence of sympathetic inflammation. Several cases are reported in favor of this operation; and the author's final conclusion is: "When all inflammation has disappeared, the best method of operating is that of Mr. Critchett, by which the iris is not wounded, hemorrhage is reduced to a minimum, and the least possible occasion is given to inflammatory reaction; and, lastly, no large opening is made into the globe through which a fluid vitreous may escape, as it does occasionally during an iridectomy, in quantities sufficient to produce collapse of the eyeball."

BOOK NOTICES.

A Compend of Gynecology. By Henry Morris, M.D. Philadelphia: P. Blakiston, Son & Co., 1891.

This little book is number seven of the series of Quiz Compends, issued from time to time by these publishers, and bears the usual imprint of their careful work. The excuse for its publication, as given by the author in the preface, is the fulfilment of a long-delayed promise to his former students and present publishers. The book contains 175 pages, the first 75 of which are devoted to the anatomy and development of the female genital organs and to gynecological examinations. The examinations particularly are gone into most fully, and their perusal will prove of benefit to the general practitioner as well as to the author's students. The rest of the book is devoted to the diseases peculiar to women. The pages reflect the author's own views as to treatment, rather than any attempt to bring the literature up to date or make it complete. Like all compends, it belittles its subject; but taken from the point of view of an epitome, rather than a treatise on the subject, it probably will answer its purpose as well as any other of its kind.

Koch's Remedy in Relation Specially to Throat Consumption. By Lennox Browne, F.R.C.S. Ed., Senior Surgeon to the Central London Throat Hospital, etc. Philadelphia: Lea Brothers & Co., 1891.

It is exceedingly rare to find within the compass of 114 pages as much scientific information as is given in this little volume. The entire subject of laryngeal tuberculosis is discussed in the most able manner; the clinical history and histological features are given in detail, the latter chapters of the book being devoted to the consideration of the *rationale* of Koch's treatment and the indications and technique of the same. A report of thirty-one cases and an appendix complete the work, which is fully illustrated throughout by fifty original drawings. In the consideration of the histological characters of tubercle, the author shows himself as much a master of pathology as of laryngoscopy, and the best and newest views only are given. It will surprise many to find *leprosy* considered as probably identical with tuberculosis, its reaction to Koch's lymph being about that of lupus. Under methods for staining tubercle bacilli, the following directions are given: "Coat a cover glass or slide with a thin film of hardened gelatine or collodion, place in an oro-nasal respirator over the patient's mouth for fifteen minutes, and stain." The fact that bacilli *can* thus be demonstrated, opens up quite a new field of study in the etiology of consumption.

In reviewing the *rationale*, indications for, and methods of administering Koch's treatment, nothing seems to have been omitted, and it is noteworthy that the most extreme care and previous study of the patient are repeatedly enjoined.

The table of cases is most instructive and full, and being fully illustrated by drawings of the laryngeal images, sphygmographic tracing and temperature charts, is of the greatest value, whether Koch's doctrines are accepted or rejected.

In addition to being a classical exposition of the subject-matter, the brochure is an admirable example of the very best modern scientific work, and, as such, is recommended to all would-be medical scientists, as well as to clinicians and pathologists.

A Manual of Auscultation and Percussion. By Austin Flint, M.D., LL.D. Revised by J. C. Wilson, M.D. Philadelphia: Lea Brothers & Co., 1890.

The fifth edition of this work of Flint calls attention again to a publication which is, at the same time, a record of medical development and a model of medical teaching. Austin Flint entered the profession at a time when the science of physical diagnosis was still uncertain and unfinished; during his lifetime it grew into an accurate science, with much of his individuality stamped upon it. Much of his proposed nomenclature is to-day the common property of the profession; many of his original observations are repeated daily by practising physicians. But the chief merit of the book rests, as the editor points out, not on the knowledge it contains, but on the clearness and appropriateness of its style, the accuracy of its statements and the practical treatment of the subject, at once difficult and essential to the student of medicine. The book stands, not as a hasty compilation for an eager publisher, but as a monument to the careful; thorough life-data and thought of a man who was pre-eminent in his domain of medicine.

Auscultation and Percussion. By Frederick C. Shattuck, M.D. Detroit: Geo. S. Davis, 1890.

This little book is a clearly written treatise over much the same ground as covered by Flint's work, but in a more concentrated form. The book is easy reading, and is enriched by plates from Weil, mapping out the different viscera. While necessarily not as interesting a book as Flint's, it is undoubtedly a valuable contribution to the many shorter practical works now filling our book-stores.

The Daughter: Her Health, Education and Wedlock. By William M. Capp, M.D. Philadelphia: F. A. Davis, 1891.

The title, style and finish of this little volume claim attention. It aims to enable the mother to second more intelligently the efforts of the medical adviser. This end is attained by a successive study of the infant, child, girl and wife, followed by well-timed and comprehensive suggestions relative to the development, functions, ailments and habits of the child. One cannot read the book without being pleased that there is to be had, in such readable form, so much that is essential to the wife and mother. Too often the young wife is utterly at sea in regard to her new relations, and views with apprehension and alarm, processes entirely physiological. To the daughter, at an earlier period, there are many morbid impressions and erroneous ideas, which need discreet and well-timed discussion. Without the aid such as this book supplies, it is almost impossible for the mother to meet fully this demand. To the physician, this publication should be welcome because it will spare him the tax on his time and thought required to give personal instruction in the lines here handled clearly, fully and with a high-toned attractiveness.

THE YEAR BOOK OF TREATMENT FOR 1891. A CRITICAL REVIEW FOR PRACTITIONERS OF MEDICINE AND SURGERY. Philadelphia: Lea Brothers & Co., 1891.

The plan of this book, which, as its brief preface declares, is a concise epitome of the chief articles of the year, is prepared under the direction of twenty contributors, all of whom are men well known in the special branches of medicine which they have undertaken to edit. For instance, diseases of the heart and circulation are under the charge of J. Mitchell Bruce; diseases of the genito-urinary system are reviewed by Reginald Harris; diseases of women by D. Berry Hart; diseases of the nervous system by James Ross and E. S. Reynolds, and diseases of the eye by Henry Power. Most of the sections contain excellent resumés of the current literature; and in spite of the fact that now and then curious errors in abstracting occur, so that authors are caused to hold opinions which they never uttered, as a reference to their original papers would prove, the book, on the whole, is satisfactory and deserves support. Anyone who desires to be sure of what the author has said, naturally will turn to the original source, the reference to which is always given.

THE INTERNATIONAL MEDICAL ANNUAL AND PRACTITIONER'S INDEX FOR 1891. Edited by P. W. WILLIAMS, M.D. New York: E. B. Treat, 1891.

Thirty-eight names are found in the list of colaborators in the ninth issue of the International Medical Annual. The book is composed of four parts—one devoted to new remedies and a review of the therapeutic progress of the year, a second to special articles on diagnosis, a third to the consideration of new treatment, and the fourth to miscellaneous articles touching upon sanitation, climatology, asylums, books, etc. We have on previous occasions referred with satisfaction to the Medical Annual, and believe that its numerous references to diseases, and to remedies applicable in the treatment of these diseases, as well as the longer articles found in the third part, will prove of value for reference and consultation. There is an amazing amount of information contained within the covers of this very handy work of reference.

INTESTINAL DISEASES OF CHILDREN. Second Edition. By A. JACOBI, M.D. The Physician's Leisure Library. Detroit: Geo. S. Davis, 1890.

The author has succeeded in giving to the profession an exceedingly valuable work. While rendering due credit to the beliefs and methods of others, he clearly indicates his own preference and practice. This is to be commended, since no small part of the value attached to the work of a prominent writer lies in the help afforded by his individual judgment. The all-important subject of food is taken up in the first chapters; the breast-milk and its alterations, and the diet of wet-nurses. Cow's milk and other substitutes for human milk are all briefly and clearly discussed. After some general directions upon the method of feeding children and the nourishment which should succeed the period of infancy, diseases of the mouth and tongue are considered. Next follow affections of the stomach and intestines.

The reviewer is inclined to accord very high praise to the work. It is characterized by a sound common sense, a clearness of thought and a directness of expression not commonly found in medical writings. It is evidently the result of a wide practical experience. Certain long-cherished traditions are not treated with tender hands; they are not rejected, however, until they are shown to be false lights.

TEXT-BOOK OF HYGIENE. A Comprehensive Treatise of the Principles and Practice of Preventive Medicine from an American Standpoint. By GEORGE H. ROHE, M.D. Second Edition. Philadelphia: F. A. Davis, 1890.

In this work the author has endeavored, as he states in his preface, "to gather within its covers, the essential facts upon which the art of preserving health is based, and to present these to the reader in clear and easily understood language;" while in the present edition, many additions have been made "to incorporate the advances made in sanitary science and art since the issue of the first edition."

The first purpose has been accomplished in as admirable a manner as the necessary restriction of space would allow, and the general value of the book has evidently not suffered in the fulfilment of the second. To each of the many subjects discussed, as pertaining to hygiene or sanitary science, a separate chapter is given. In this chapter are embraced, in a concise and comprehensive form practically all of the facts and well-established principles relating to that subject, in so far as we are now acquainted with them, and at the close of the chapter is added a list of standard authorities and references, to which the student may go for further information on the theme under discussion. The wonder is how Prof. Rohe has made the book so readable and entertaining with so much matter necessarily condensed. In general, he agrees closely with the most prominent American sanitary authorities; but in one or two instances, he takes occasion to differ slightly from them. As to which has the stronger side of the argument, the reader must determine for himself.

The chapters on The Germ Theory of Disease, Contagion and Infection, History of Epidemic Diseases, and on Antiseptics, Disinfectants and Deodorants are all especially valuable at this time, now that the germ theory is being universally accepted as a basis of practice, both in preventive and curative medicine. However, one cannot help wishing that certain other chapters were longer—for instance, the one on Exercise and Training—these being a means, if properly used, of making the system insusceptible to the attacks of disease germs.

The book is well printed with good, clear type, is attractive in appearance, and contains a number of valuable tables and illustrations that must be of decided aid to the student, if not to the general practitioner and health officer. Altogether, the manual is a good exponent of hygiene and sanitary science from the present American standpoint, and will repay with pleasure and profit any time that may be given to its perusal.

DIE BLASENENTZÜNDUNGEN, IHRE ÆTIOLOGIE, PATHOGENESE UND BEHANDLUNG. THORKILD ROOSING. Hirschwald, Berlin, 1890. Inflammations of the Bladder: their Etiology, Pathology and Treatment.

This is a book of 225 pages, translated into German from the Danish. To elucidate the question of etiology, the author made clinical and bacteriological studies of thirty cases, diagnosed as cystitis. Micro-organisms were found in twenty-nine. In three cases tubercle bacilli were present. The other twenty-six cases showed an abundance of bacteria colonies, all of which could produce changes in the urine. The bacteria found were of two groups—the pyogenic and the non-pyogenic. Of the first group, there were (1) tubercle bacilli (found five times). It alone does not cause any ammoniacal change in the urine. Acidity is characteristic of non-complicated tuberculous cystitis. The other microbes cause fermentative changes. (2) Staphylococcus pyogenes aureus

(eight times); (3) staph. pyogenes albus (once); (4) staph. pyogenes citreus (twice). The following have never before been described: (5) streptococcus pyogenes ureæ (four times); (6) diplococcus pyogenes ureæ (twice); (7) coccobacillus pyogenes ureæ (once); (8) micrococcus pyogenes ureæ flavus (once).

Of the second group, no representative has as yet been described. They have the peculiar property of causing changes in the composition of the urine without the production of pus. They are named as follows: (1) diplococcus ureæ trifoliatus (three times); (2) streptococcus ureæ rugosus (three times); (3) diplococcus ureæ (twice); (4) coccobacillus ureæ (once).

Cystitis from gonorrhœa is rarer than is usually supposed, and is due to a pyogenic bacteria and not to the gonococcus, which only flourishes on cylindrical epithelium.

Pus is only found in a bladder which contains pyogenic microbes, while ammoniacal urine is evidence of the presence of the bacteria which produce fermentative changes. Injection of pure cultures (lower animals) gave no results until the urethra was closed for six to twelve hours. Then the tubercle bacillus was the only one that failed to act. The pyogenic microbes produced pus, while the non-pyogenic caused simply an extra secretion of mucus.

Microbes can enter the bladder in four ways: (1) by the urethra, as when the catheter is used, and also when the mouth of the bladder is kept open or the urine regurgitates from the urethra on striking a stricture; (2) by perforation of an abscess into the bladder; (3) by coming into the bladder from the kidney; (4) by means of the blood, as in tuberculous cystitis.

There are two forms of cystitis—catarrhal and suppurative. The first is due to anærobic microbes, which change the urine without producing pus. The second is composed of two groups, one being an ammoniacal, purulent cystitis, and the other a tubercular or acid cystitis.

The second section of the work refers to prophylaxis and therapeutics. Out of ninety-four cases of cystitis, twenty-one were cured. Sixty cases were caused by the introduction of instruments; of these, fifteen were cured. Out of the author's twenty-nine cases, six were catarrhal, four being cured. The rest were suppurative, of which two were cured. Antiseptic injections were used, but they were only palliative. In one case a cure resulted from an injection of nitrate of silver solution. Experiments showed nitrate of silver to be efficacious in two, five and ten per cent. solutions. Creolin, two per cent., was inefficient. Boracic acid in four per cent. solution is almost valueless. The nitrate of silver was the only reliable injection. He advises washing the bladder out with boracic acid, and injecting one and a half to three drachms of a two per cent. nitrate of silver solution daily, until the urine is normal. The strength can be increased until five per cent. is reached. A purulent cystitis is a contra-indication to any cutting operations. In tuberculosis, local treatment, as curetting and cauterization, is the only means available.

The third section is composed of tables of examinations, cases, etc. Table I shows the chemical, microscopical and bacteriological examinations of thirty cases of cystitis. Table II shows the results of examinations for bacteria in thirty normal urethras. Table III shows the results of investigations of those bacteria which cause decomposition of the urine.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND J. HOWE ADAMS, M.D.

Unusual Complications of Enteric Fever.

Finlayson (*Amer. Jour. of Med. Sciences*, Mar., 1891) gives instances of nine unusual complications of typhoid fever.

(1) Abortive attacks not free from danger. In an epidemic of enteric fever in the Glasgow Western Infirmary, several of the inmates had slight febrile attacks lasting a few days and ending in recovery. One patient had an attack in which the fever lasted but two days; fifteen days after the cessation of fever she had a relapse, which proved fatal in four weeks.

(2) Carbuncle and death following an obscure illness, with little or no pyrexia. A gentleman, in whose house typhoid fever occurred, was ill and out of sorts for two weeks; his temperature never rose above 99°; this was followed by a carbuncle, which caused death from septicæmia.

(3) Uræmic convulsions. A case of supposed typhoid fever, with highly albuminous urine, which contained hyaline and granular casts, was seized with convulsions, evidently uræmic, and died on the seventeenth day.

(4) Grangrene of the sole of the foot. One month after the fever began in this case, a gangrenous spot appeared on the sole of the foot, where there was no pressure; the case developed cystitis, and died in the sixth week.

(5) Alarming nervous disturbance with the subsidence of pyrexia. A case with relapse ran a course of four weeks; there were but few nervous symptoms; but as the fever declined, delirium set in, low and muttering, with terrible visions; a peculiar tremor of the head and complete sleeplessness also occurred.

(6) Double periostitis with necrosis. A case with relapse lasted five weeks; over two weeks after defervescence, there was sudden elevation of temperature, with pain in both tibias; necrosis followed, and the patient was under treatment at the end of the eighth month.

(7) Gangrene of the lung. Consolidation of the base of one lung took place in the fourth week of the fever, which was followed by gangrene of the lung. Death occurred in the eighth week.

(8) Paralysis and anæsthesia of the limbs after recovery. Three weeks after recovery from typhoid fever, numbness and stiffness of the legs supervened, followed by weakness of the arms. Great wasting of the muscles occurred; there was complete inability to stand. Recovery took place under treatment with tonics and electricity.

(9) Concurrent development of enteric fever and tubercular meningitis. A young man was taken suddenly ill, with symptoms of meningitis; the meningeal symptoms cleared up and the case ran a course of typical typhoid fever. During the course of the fever peculiar urinary symptoms arose; fever subsided, but progessive emaciation occurred, and signs of meningitis again appeared. He died of meningitis in about one month from the beginning of his illness. The *post-mortem* showed typical tubercular meningitis, and partially healed ulcers of Pyer's patches, which were distinctly *not* tuberculous.

The Influence of Fever upon the Bacillus Coli Communis.

Bard and Anbert (*Gaz. Hebdomadaire*, Jan. 31, 1891) found the bacillus coli communis with other bacteria in the feces of persons free from fever. In the feces of patients with high fever from tuberculosis, they found it alone. Others found pure cultures of it in typhoid feces. If Eberth's germ and this are identical, the former may be the effect and not the cause of typhoid fever.

Tachycardia.

Fraentzel (*Deutsche med. Wochenschrift*, Feb. 26, 1891) defines this disease as one without demonstrable organic heart lesion, in which repeated sudden attacks of rapid heart action occur and as suddenly disappear. The number of beats may reach one hundred and forty and over per minute. He considers most of the cases to be due to paralysis of the inhibitory fibres of the pneumogastrics and others to irritation of the accelerator fibres of the sympathetic. The former may sometimes be controlled by digitalis or by pressure over either or both pneumogastrics in the neck. The latter may frequently be controlled by a single dose of morphia. It is sometimes difficult, however, to determine to which of the two groups a case belongs. The author closes his article by quoting the following case: A man, aged 35, complained for three months of sudden severe palpitation of the heart. The heart's dulness was increased; there were no murmurs. While in the wards, the patient had two attacks which responded to digitalis. A third attack occurred, with rapid dilatation of the heart, in which the patient died. The *post-mortem* showed dilatation of left ventricle and hypertrophy of right, much increase of fibrous tissue in both ventricles and fatty degeneration of the left.

Subcutaneous Administration of Gold and Sodium in the Treatment of Tuberculosis.

White (*N. Y. Med. Record*, March 21, 1891) uses a combination of gold and sodium with manganese. It forms a clear, garnet-colored liquid, and is used in doses of one to two drops, mixed with a one per cent. solution of carbolic acid. In eight cases cited and others under observation, he observed the expectoration was lessened, cough was decreased, and the nutrition of the patients was improved. In no case was there an abscess at site of injection. A marked reaction occurred in some cases, which could be controlled by regulating the dose.

Diagnostic Value of Plasmodium Malariæ.

Hertel and Noorden (*Berlin klin. Wochenschrift*, March 23, 1891) cite two cases in which examination of the blood was of especial value. Case I had chill, fever and sweat for eleven consecutive days, with marked remissions or intermissions. Plasmodia were searched for frequently (one hundred examinations) but never found. Under the use of quinine the chills and fever disappeared. After eleven days the fever again returned, and a pleural exudate was observed. In about three months, consolidation and softening of the apex of the right lung took place. Case II was seized with fever, and before a characteristic temperature was manifest, plasmodia were found in the blood. The organisms disappeared under the use of quinine.

Prognosis of Structural Diseases of the Heart.

Hypertrophy, dilatation and fatty degeneration are discussed by Broadbent (*British Medical Journal*, March 21, 1891). The author considers the prognosis of hypertrophy that of its causes, which are aortic regurgitation and stenosis, mitral regurgitation and high arterial tension, due to gout and renal disease for hypertrophy of left ventricle, and emphysema and bronchitis for right ventricle. The præcordia may be bulging or not. The first

sound is not well heard at the apex, while the second sound is usually louder than normal. At the aortic cartilage the first sound is inaudible or weak, while the second sound is accentuated. Compensation is sufficient so long as there are no symptoms of embarrassment of the circulation.

The auscultatory signs of embarrassment are lengthening of the systolic pause at the expense of the diastolic, and reduplication of the first sound. The prognosis becomes serious when the first sound is broken up to any considerable degree. Dilatation is a notice of failure of strength. The ventricles habitually fail to expel all of their contents, and in well-marked cases but little blood is expelled with each systole. The dilatation attending aortic regurgitation is probably compensatory, in that it is necessary that a greater amount of blood may be forced into the arteries so they may remain full after the leakage back into the ventricle. The pulse of dilatation is irregular in force and rhythm. Palpation is one of the best tests as to the heart's strength, with the palm of the hand over the right venticle and the fingers over the apex. If a forcible beat of the right ventricle can be felt, the prognosis is better than if but a feeble impulse is felt. The first sound is short and loud at apex, as compared with hypertrophy, and is audible at aortic cartilage, while the second sound is feeble. Prognosis is better with a long systolic pause than with a pause which is shortened, the latter being notice of failure of the ventricular wall.

Observations on Koch's Treatment of Tuberculosis of the Genito-Urinary Organs.

Burckhardt (*Correspondenz-Blatt*, March 15, 1891) has collected seven cases of genito-urinary tuberculosis which were treated with Koch's lymph. In four, the kidneys were involved, in three they were not. His conclusions are: First, in those cases in which tubercle bacilli were observed in the urine before the injection of the lymph, the bacilli were excreted in greater numbers in the beginning of the treatment, but the increased elimination ceased if the treatment was continued. Second, the increased excretion of bacilli began in all cases in the first twenty-four hours of the treatment. Third, the more intense the reaction, the greater the number of bacilli excreted. Fourth, no undoubted change was noted in the bacilli, though there was a tendency to nuclear formation. Fifth, bacilli were never observed in the blood of the patients. Sixth, in those cases in which the kidneys were involved, there was polyuria with frequent micturition. Seventh, the chemical constituents of the urine were not changed. Eighth, hæmaturia was frequently observed in the beginning of the treatment. Ninth, the patients lost weight, and there was no improvement in the general condition.

The Etiology, Pathology and Therapy of Nephritis Interstitialis Bacillosa.

Letzerich (*Zeitschrift f. klin. Medicin*, Bd. 18, Heft 5 and 6, 1891) observed in the years from 1880 to 1889, especially in the year 1882, a number of nephritic cases due to a characteristic bacillus, from cultures of which he has been able to produce the same disease in rabbits. He has traced the bacillus to stagnant water used in the city for washing purposes. The symptoms are similar to those of other nephritic cases, excepting that the gastric symptoms are especially prominent. The determination of the presence of the bacillus is, however, the essential factor. As a rule, the simple methods, the application of heat and nitric acid, of examining the urine for albumen, suffice to determine the small quantities present in these cases. Occasionally, however, when ordinary tests fail to detect the presence of albumen, heating the urine and adding pure alcohol, with subsequent shaking of the mixture, give a flocculent precipitate which becomes yellow on the addition of nitric acid, with caustic potash changing to a reddish tint. This precipitate contains epithelial cells, cells from the uriniferous tubules, but no tube-casts. The bacilli nephritici are small, straight, rather short, moderately thick rods which live in a temperature above 59°

Fahrenheit, and which on plate culture show a yellowish tinge. They are easily found and prepared for examination. A small drop of the precipitate in the urine is placed between two cover glasses and then brought in contact with a preparation of chloride of calcium; when the preparation has become moderately dry in the air, it is passed through the flame of a spirit-lamp, then stained with a concentrated watery solution of methyl-blue, and mounted in Canada balsam. *Post-mortem* examination reveals the fact that only in interstitial structure of the kidneys can the bacilli develop, although the spores may be present in every other organ. The prognosis is not unfavorable; most cases in children recovering in three to six weeks, in older persons in three to nine weeks. The element of infection or contagion from one person to another has not been observed. The treatment consists in controlling the symptoms; against the fever, antipyrine; against the headache, ice; internally, hydrochloric or phosphoric acid, Haller's acid elixir, benzoate of soda as an antimycotic, digitalis, warm baths, etc. The digestive symptoms call for particular attention, catarrh of the intestinal tract being especially common. In the few cases of chronic nephritis bacillosa, with chronic intestinal catarrh, Letzerich orders a pill of tannin with opium.

A New Method of Examination of the Digestive Organ with One Result.

Sahli (*Correspondenz-Blatt f. Schweizer Aerzte*, Feb. 1, 1891) demonstrates the practical difficulties interfering with the reliability of methods of examination of the digestive functions. He presents a method obtained after repeated failures which he regards as efficient. The principle of the method consists in introducing a decigram of potassium iodide in a small water-tight capsule into the stomach and measuring the time consumed before the appearance of the drug in the saliva, detected in the usual way with nitric acid and starch. This time is occupied in digesting the gelatinous capsule, setting free the iodide of potassium and its absorption by the system. The capsules contain two-tenths of a gram of potassium iodide in wafers as thin as tissue-paper. It is necessary that the potassium iodide is set free by the active digestive power, not simply be diffused through the membrane. A control experiment, made by placing the capsules in water at blood temperature for an hour, showed that the capsules remained water-tight. He takes up the question whether the presence or absence of free hydrochloric acid in the stomach influences the rapidity of the digestion, a question which is more complicated than he supposed at first. He prepared test meals, with each of which he gave a capsule to a number of healthy and sick individuals, whose gastric juices had been analyzed. Their stomachs were carefully washed out until thoroughly empty, and then the test meal and capsule were given. In some of the trials, a one to two and a half per cent. solution of hydrochloric acid with pepsin was given; in other cases a one per cent. soda solution with pancreatic powder was administered.

This test meal was always given in the morning. The patients remained in bed during the test, expectorating at first every fifteen minutes into a clean vessel; later, expectorating only every half hour. The results were uncertain. In some cases where pepsin and hydrochloric acid were given, the salt appeared sooner in the saliva than with the administration of soda and pancreatic powder; in other trials these results were reversed. Also the presence or absence of hydrochloric acid normally in the stomach did not seem to aid or retard the appearance of the drug. It is undoubtedly true that these preparations of acids and alkalies and the capsules remain only a short time in the stomach, being absorbed by the system or being swept into the intestine. Sahli questions whether the bowel cannot take up vicariously the functions of the stomach and perform them even when considerable atrophy of the gastric mucous membrane exists. This theory is partly confirmed by the fact that pepper aids intestinal digestion either by influencing peristalsis or by stimulating chemical action. During the administration of pepper, the potassium iodide appears more quickly in the saliva.

A Case of Abscess in the Thyroid Gland, Following Typhoid Fever.

Spirig (*Correspondenz-Blatt f. Schweizer Aerzte*, Feb. 15, 1891) recognizes the fact that the so-called complications of typhoid fever are etiologically not on a satisfactory basis. He divides them into three groups in reference to their bacteriological origin: (1) The process in which the usual suppurative and inflammatory action appear alone (streptococci, staphylococci). (2) The process in which the typhoid bacillus also appears in addition. (3) The process in which the typhoid bacillus is found alone. In the first group are generally placed all cases of struma after typhoid. Typhoid exhibits a great tendency to this complication. The case reported was that of a young girl who developed typical typhoid from which she recovered, but in the third week of convalescence an abscess formed in the neck. Cultivation of the micro-organisms present revealed not only the fact that it was not tubercular, but that staphylococci albi and the typhoid bacilli were present.

The Relation of Uric Acid to Gout.

Cammerer (*Deutsche med. Wochenschrift*, March 5, 1891) studies the advances made in the knowledge of the relation of uric acid and gout. He recognizes uric acid as a nitrogenous product from the albumen of the body with the formula of $C_5H_4N_4O_3$, produced not in the kidneys but in the liver; he regards it as an ultimate product, not as a step in the process of urea-formation. It is distinguished from other constituents of the urine by its extreme insolubility. He prefers the silver method to the hydrochloric acid method in the determination of uric acid. Uric acid has been discovered in the blood of gouty persons, leucæmic cases and in the blood of birds. A thousandth of one per cent. can be detected by the silver method. Garrod found uric acid in the blood of patients suffering from lead poisoning as well as in gouty cases, from which he endeavored to create an analogy between the two conditions. The analyses reported by different observers vary most widely, being in many cases strongly contradictory, due undoubtedly to faulty methods of observation. Cammerer believes that these researches are much weakened by the omission of the estimation of the urea secretion and production. The conclusion is reached from the examination of the urine, that either gouty persons lay up a certain quantity of uric acid in the body, or the destruction of the albumen molecules results in the production of less uric acid than is produced normally. If the repeated examinations of the blood confirm the theory that there is an increased amount of uric acid in the blood of gouty persons it is due either to an evident increase of uric acid formation, as in birds and leucæmic cases, or it is due to an insufficient excretion of the manufactured product in the usual way. The first assertion has not yet been fully established; the other statement, as pointed out by Garrod, is sufficient to produce the diseased condition. This deficit may be so small that it cannot be detected; hence in these cases there is no violent change in metabolism and the gouty person may retain good digestive powers indefinitely. The relation of urea to uric acid in normal adults is about 100 to 2.8; in gouty persons, not under treatment, it averages about 100 to 3.1, hence the relative uric acid production and secretion are generally only slightly increased.

Malarial Neuralgia of the Tongue, with Ulceration.

Diberder (*Gazette Hebdom. de med. et chirur.*, Feb. 21, 1891) publishes two cases in which ulceration of the tongue was prominent; both patients were reduced to the simplest liquid diet, and active local treatment tried; but the lack of success attracted attention to the necessity of searching for an underlying cause. In both these cases, the influence of malaria was recognized. On being placed on quinine, the ulcerations rapidly disappeared, together with all pain, the patients being quickly freed from all the previously obstinate symptoms. The author cites the paucity of reports of such cases, and suggests the difficulty of a diagnosis under the circumstances and the lesson which it teaches, of regarding antecedent and concomitant conditions in an trouble apparently local.

SURGERY.

UNDER THE CHARGE OF

D. HAYES AGNEW, M.D., LL.D., AND J. WILLIAM WHITE, M.D.

ASSISTED BY

G. G. DAVIS, M.D., M.R.C.S., AND THOMAS R. NEILSON, M.D.

The Treatment of Lymphangitis and Diffuse Phlegmons of the Extremities by the Carbolized Spray.

Schwartz (*Revue Générale de Clinique et de Therapeutique*, March 4, 1891, p. 130) details two cases of diffuse phlegmons of the extremities which he cured by spraying with carbolic solution. The first case was a man, aged 29. In order to let out accumulated pus, etc., an incision ten centimeters long was made on the outer surface of the knee. There was an enormous collection in the calf, which was also evacuated. Three vertical incisions were made in the thigh, and all the cuts washed with chloride of zinc, one to one hundred. Later on, two new incisions were made on the thigh, and the one on the outer side of the knee extended still farther. Scarifications with a bistoury were made around the root of the thigh at the upper limit of redness. The part was dressed with a sublimate solution, one to two thousand, and twice daily a steam atomizer sprayed the whole limb for an hour with carbolic solution, one to forty. The patient recovered.

The other case was much like the first, but was sprayed with a carbolic solution, one to sixty, three times daily, for an hour each time. From that moment the patient improved. The author says that in such conditions the carbolized spray is truly an excellent remedy that enables one to arrest and rapidly modify grave septic processes, but that its use should be combined with large incisions and moist antiseptic dressings.

On the Detachment of Small Pieces of the Joint Surfaces by Slight Injuries.

Prof. Riedel (*Centralblatt f. Chirurgie*, March 2, 1891, p. 225). Slight injuries can so disturb the nutrition of the part that it may be cast loose into the joint, but an immediate detachment of the injured piece is not by any means exceptional. Poulson removed a cartilaginous body from a knee joint, the next day after an injury, and Schussler removed one eight days after; Teal removed one seventeen days after; and König, in his Surgery, p. 753, gives two cases which were undoubtedly primary detachments. The author also gives a case of his own. These cases are undoubtedly more common than has generally been supposed, but whether they are more common than those due to osteochondritis dessicans can only be determined by the publication of a large number of very carefully observed cases.

Fourth Congress of Russian Physicians.

Vvedenski (*La Tribune Médicale*, March 19, 1891, p. 180), in a case of symmetrical gangrene of the extremities, found the spinal cord and vessels of the extremities healthy, but the terminal was affected with parenchymatous degeneration. Alexandroff deprecated litholapaxy in children unless an instrument equal in size to No. 14, French scale, could be used. He preferred the supra-pubic cut, with suture of the bladder. Some remarks were made on the relative value of the supra-pubic and perineal methods of operating.

The Bone Lesions of Mammary Carcinoma.

Snow (*Lancet*, March 14, 1891, p. 595) discusses this subject and refers to the sternum, which, he says, develops long before the mamma becomes fixed to the chest wall; therefore it is not an infiltration by contiguity of structure. Though not incompatible with several years of life it usually contra-indicates any operative procedure of gravity. The deformity affects the sternum for about two inches downward, from the upper margin of the second

costo-sternal articulation. A most typical specimen exists in the museum of St. Thomas' Hospital; in it most of the bones of the trunk and extremities are affected and distorted. The following conclusions are submitted: (1) That bone lesions in connection with breast carcinoma are not exceptional, but an ordinary phenomenon of the later stages of this disease. (2) That the condition depends, not solely upon absorption of calcareous salts, but is the result of actual deposit of malignant cells in the marrow. (3) That the marrow, when thus infected, forms a species of "nidus for the resting spores" of the neoplasm, in which the cancer cells insidiously flourish, it may be for several years, without any conspicuous indications of their presence.

THE USE OF PETERSEN'S RECTAL BAG IN LITHOTRITY AND IN SOUNDING FOR STONE.

REGINALD HARRISON (*Lancet*, March 14, 1891, p. 597) states that he has found the use of Petersen's rectal bag, distended after its introduction into the bowel with two or three ounces of water, extremely useful in turning out sacculated stones into the larger cavity of the bladder, and in preventing the lodgment of fragments during a lithotrity.

THE TETANIFEROUS MAN.

PROF. VERNEUIL (*Gazette Hepdomadaire de med. et de chir.*, Feb. 14, 1891, p. 76) applies this term to the individual who carries the virus of tetanus around on his person, although unaffected by the disease himself. The professor discusses the causes and means of prevention of this affection from a clinical standpoint. If one considers the horse, with its secretions, excretions and surroundings, as all-capable of propagating tetanus, we cannot regard as impossible, infection by the secretions and excretions of man. The tetanic property of equine saliva has been demonstrated. The saliva of a human being may, for the time being, contain tetanus germs, and thus a bite from such an individual may cause tetanus. A case is given illustrating this. The secretions and excretions are only infected by the ingesta (food, etc.), so that the sperm, milk and urine are never infected with the virus. He says, "I have already admitted, and I now admit more than ever, that a surgeon, who has dressed a tetanoid patient, may communicate the disease to other patients. I also admit that any person whatever, but above all a physician whose hands have been in contact with a horse, not tetanic, but simply tetaniferous, may infect the wounds of his fellow-beings, as in the cases cited. I also admit, finally, that such a man is not only dangerous to those whom he approaches but may even give himself tetanus by auto-inoculation, either by wounding a part of the skin impregnated with the virus, as the plantar and palmar regions, or touching a wound on any part of his body with his impure hands." Two cases follow, in which he traces the cause to a wound inflicted on the skin which was previously infected with the tetanic virus. The bacillus of Nicolaier was found in one of these cases. Three additional cases are given with a very careful analytical study of each.

THE OPENING OF LUNG CAVITIES IN CONNECTION WITH THE USE OF KOCH'S LYMPH.

DR. EDMUND LESER (*Münchener medicin. Wochen.*, Feb. 24, 1891, p. 135) describes two cases in which tubercular cavities in the lungs were drained prior to the use of Koch's liquid. This gave to the increased discharge a suitable outlet. The first case was a woman, aged 40 years, who had had hæmoptysis, fever, loss of appetite, night-sweats, emaciation; she was unable to sit up in bed without help. There was a large cavity in the upper portion of the left lung. Under chloroform-morphia narcosis, an incision, seven centimeters long, was made in the first intercostal space, from a finger's breadth inside the processus coracoideus to the edge of the sternum. After division of the skin and pectoralis major, there was seen to the outer side and partially covered by the pectoralis minor, the axillary vein. This muscle was divided transversely and the superior thoracic artery tied. The axillary vein was thus laid bare and confided to an assistant. To give more room upward, the lower edge of the first rib was slightly chiselled away. The intercostal muscles were then incised. Bleeding was slight and carefully stopped. Next the pleura was incised and found adherent to the

lung. The cavity was punctured with a trocar but no fluid obtained. It was then opened for a distance of about four centimeters with a Paquelin's cautery. It was one to one and a half centimeters below the surface. About a tablespoonful and a half of shreddy pus was evacuated and the cavity and wound packed with antiseptic gauze. The patient rapidly improved, and on the thirteenth day, injections of Koch's lymph were begun. The interior of the cavity was also twice painted with a one per cent. solution of the same. Improvement was marked, and the cavity has diminished one-half in size. The other case was of a man, aged 42 years, of good physique, with a smaller cavity. On the ninth day injections were commenced, but only three as yet have been given. The favorable course of these two cases encourages us to continue. It is a *sine qua non* that the pleuræ should be adherent, and, as Sonnenburg has advised, the opening in the lung tissue should be small, as the necrotic changes afterward enlarge it. In conclusion, the use of Koch's lymph is only advisable in cases with tubercular cavities after a means has been provided for the escape of the ensuing abundant discharge.

The Treatment of Malignant Neoplasms by Aniline Injections.

Prof. Mosetig-Moorhof (*Wiener klin. Wochen.*, March 19, 1891, p. 224) presented two patients. One had a myeloid sarcoma of the chin; all visible traces of the new growth had disappeared. She had received in all fifty injections of methyl-violet solution, one to five hundred. About 120 grams of the solution were used. The other case, a man, had had a cysto-sarcoma of the sternal region. It completely disappeared. The sarcomatous infiltration of the muscles has, through retrogressive metamorphoses, subsided, leaving a few nodes, the size of beans, which are regarded as the residue of the stroma, *i. e.*, connective tissue. This patient had received twenty-one injections, or sixty-three grams. He reported the case of a woman, aged 47, with an epithelioma nasi. She had been under treatment thirty-four days; had received nine injections, each of three grams, and was considerably improved. Another case, male, aged 58, affected with carcinoma of the tongue; had had twenty-six grams of the methyl-violet solution injected into the tongue and floor of the mouth. Marked improvement followed. Out of sixteen inoperable cases, two died, and fourteen have been improved. Any increase or dissemination of the neoplasm following the injections has never been seen. The injection treatment is not suitable for very vascular tumors, and should not be employed for those which spring from an inaccessible base, or such as require the needle to pierce a large serous cavity in order to reach them. The solution used is one to five hundred methyl-violet, and is to be filtered through asbestos which has previously been heated to a red heat. A three-gram syringe, with needles of various lengths, is employed, and three to six grams are injected every second or third day, mostly from the periphery toward the centre. In ulcerated neoplasms the needle should be introduced at a distance from the ulcer. Evil results from these parenchymatous injections have never occurred,—at most, there has been a slight redness or œdema. *Discussion.*—Prof. Billroth did not consider Mosetig's cases as complete cures. A new growth can only be counted cured when all specific tissue elements have ceased to exist and been harmlessly resolved, and the previously infiltrated tissues remain as simple scars. There are but two new-growth diseases which we can heal, viz., syphilitic, by means of mercury, etc., and malarial, by means of quinine, etc. Billroth says: "I have treated a large number of cases by Mosetig's method, and three I recall perfectly. They were large, non-ulcerated sarcomas. I can only say that all three were made worse. In the treatment of ulcerated carcinoma by methyl-violet paintings and injections, the results were also unsatisfactory. As regards the two cases given, the woman still has a tumor remaining. While it may be, as has been said, that it cannot contract any more, nevertheless it has not entirely disappeared, but has only been reduced in size. In reference to the other case, we only saw it as a softened, ulcerating mass, and cannot say whether it was tuberculous, syphilitic or sarcomatous. The result is good, but there stills remains a thick, diffuse infiltration of the tissues, and before this has disappeared we cannot speak of a cure."

Prof. Mosetig, in reply, stated that the case alluded to was undoubtedly a sarcoma,

and that even if his two cases were not regarded as cured, it could not be denied that their condition had been very much improved.

Castration in Osteomalacia.

Schauta (*La Clinique*, 1890, p. 28) describes the case of a woman, 32 years of age, on whom the operation was performed. Both ovaries were removed, and in less than two months the patient, who had been bed-ridden for one and a half years, was able, with some support, to walk around the room. The sensitiveness of the bones to pressure diminished, and from last accounts she was able to pursue her ordinary household duties. Fehling, in 1887, operated on a pregnant case of osteomalacia by Porro's method. Since that time eight cases have been operated on, even when no pregnancy existed. The cures were prompt and rapid. This case is the ninth.

The Treatment of Suppurating Wounds with Pyoktanin.

Korn contributes some observations on his experience in the use of pyoktanin (*Berl. klin. Wochenschrift*, Feb. 9, 1891), expressing the belief that when the method of its employment is better understood it will be found, not that the substance will supplant the rest of the antiseptics, but that it will show that it has a definite field of action, in which it will yield very good results. Its sphere of usefulness will be essentially that in which iodoform has been employed. He does not think that the latter has fulfilled the hopes which were put in it. In the treatment of suppurating wounds, he considers that pyoktanin excels all other agents, while for recent wounds other antiseptics are better adapted.

As examples illustrating the efficiency of pyoktanin, the writer mentions three cases of leg ulcers, of long duration, which healed in a very short time under applications of the ointment, combined with firm bandaging; an instance where a sinus of the toe, following periostitis, ceased to discharge pus, and healed in eight days after a thorough application; a case of neglected suppurating adenitis of the neck, which healed quickly after a liberal touching with the pyoktanin stick; a case of mastitis of both sides, which, in spite of free incision, washing with bichloride solutions and drainage, continued to discharge pus freely, and healed very shortly after the use of the stick; and one of periarticular abscess, associated with old hip disease, where, after opening, evacuation and sterilization with pyoktanin, healing was effected in a fortnight.

Korn believes that in such cases pyoktanin excels other antiseptics by virtue of its diffusibility, and that while it is an undoubted germicide, it is especially powerful against the bacteria of suppuration. He refers to the experiments of Wortman, who has found that bacteria of this class are killed by a solution of 1–1000 in half an hour, and by a solution of 1–2000 in an hour. The agent causes the death of the cell in a mechanical, not a chemical, way, and hence it is necessary to secure its prolonged contact with the suppurating surface.

In practice, he says, it is not sufficient to wash out suppurating wounds with a solution of pyoktanin, and then to apply a dry dressing; but whenever possible the surfaces should be dusted over with the powder. In abscesses, after evacuation, the walls of the cavity should be thoroughly brushed over with the pencil, and fistulous tracts should be likewise dealt with.

The great disadvantage of pyoktanin is the staining of everything with which it comes in contact; not only the parts surrounding the region where it is applied and the patient's clothing, but the surgeons hands as well. This objection, however, will be overcome almost entirely if the surgeon will avoid the use of solutions as much as possible, and will employ only the powder, stick or ointment, having first disinfected his hands carefully with bichloride of mercury.

Nitrate of Silver in the Surgery of the Urinary Organs.

Guyon, in a lecture published in *Mercredi Médical*, February 11, 1891, says of nitrate of silver, which is of daily use in his service, that he has long employed it with success in

suppurative inflammations of the bladder, and more recently as an antiseptic before and in the course of operations involving the infected urinary apparatus. For years he has recommended the use of silver solutions in the treatment of chronic gonorrhœal urethral lesions, the remedy to be applied directly to the diseased spot by means of the instillator. The strength of the solutions which he advises for this purpose varies from one to five per cent.

For vesical injections he employs solutions of 1–500, 1–300, and, in exceptional cases, 1–100. He finds these injections of the greatest value in the instances of terminal hæmaturias of sub-acute gonorrhœal cystitis, the bleeding being generally arrested immediately, or at most within twenty-four hours. In fact, in all forms of hemorrhagic inflammation of the bladder, excepting tuberculosis and neoplasms, the remedy will be found highly efficient. It has failed in his hands only in cases of inveterate or deep-seated inflammations, which are sometimes met with. In tuberculosis of the bladder he has seen the injection of a few drops of the silver solution provoke a grave hemorrhage, and in all such cases this will in a less degree be the rule, whatever the strength of the solution used.

In his own experience, and that of his pupils, he has never, in twenty years, heard of a case of fever from these applications.

That the remedy acts by virtue of its antiseptic properties, Guyon has established by bacteriological studies. Syringes which had been for a long time in use in his service were examined, and cultures made from scrapings from the pistons, as well as from washings of their interiors, and were proved to be sterile. A number of series of experiments upon a variety of microbes in different culture media furnished positive proof of the antiseptic power of the nitrate.

Guyon recommends that in operation cases, injections of the solutions be made for the purpose of preventing contamination, either from existing infection or from instruments employed. In the operation of lithotrity, he advises that the bladder be washed, both before and after the crushing with a 1–500 solution, and that it should also be used for irrigation after internal urethrotomy.

Abscess of the Brain.

Two interesting cases of brain abscess are reported by Grubert (*St. Petersburg Med. Wochenschrift*, Feb. 14, 1891). In the first, the abscess, which resulted from acute otitis media, was situated in the substance of the left cerebellar hemisphere. The patient entered the hospital on account of obstinate bleeding from the ear, for the control of which, pressure bandages and tamponing with perchloride of iron having failed, it became necessary to ligate the left common carotid. Ten days later, intense headache and stupor developed, and a thin and abundant secretion escaped from a sinus in the parotid region, which communicated with a cavity the size of a walnut, its upper limit being the denuded base of the skull. There was no evidence of mastoid disease. The skull was trephined at a point above and somewhat behind the ear, and exploration with the needle and the Pravatz syringe failed to reveal the presence of pus. Five days later, a violent hemorrhage from the ear and nose occurred, and was arrested by a ligation of the right common carotid. Seventeen days afterward the patient died comatose. On *post-mortem* examination an abscess was found in the left cerebellar hemisphere, containing thick greenish pus, and not distinctly encapsulated. The bony walls of the tympanum were carious, as was also the interior surface of the petrous portion of the temporal bone, as far as the carotid canal.

The essential interest of the case lies, first, in the association of the abscess with acute middle ear inflammation, only five other instances having been contributed to literature; secondly, in the fact that the cerebellum was the seat of the abscess, Barr and McBride having shown that the cerebrum is very much more frequently affected by extension of suppurative process.

The second case is one of abscess of the white substance of the temporo-sphenoidal lobe, with rupture into the lateral ventricle, occurring in immediate consequence of a compound fracture of the skull, the patient having been struck on the side of the head with a

stone. For five days after the injury, he attended to his duties without complaint, and then began to suffer from headache and rise of temperature. He entered the hospital, where it was found that above and behind the right ear there was a suppurating wound which communicated with a stellate, slightly depressed fracture. There being no distinct brain symptoms at the time, the wound was merely cleansed and dressed. On the morning of the next day there was wild delirium, with frequent pulse and opisthotonos. The skull was trephined at the seat of fracture, and a small rent in the dura, from which offensive pus and bubbles of gas escaped, was found. Enlarging this, the cortex was found to be lacerated, and a finger was easily inserted into a large abscess cavity in the temporo-sphenoidal lobe. Drain tubes were placed in this cavity, and a dressing applied.

The patient remained unconscious, with trismus, divergent squint of the left eye, and rigid contracture of the right elbow and hand, and died forty-eight hours after the operation. *Post-mortem* examination showed that the abscess involved the lateral ventricle, and that there was also pus in the fourth ventricle.

The peculiarity in this case is the immediate development of the abscess in connection with the compound fracture. Von Bergmann is quoted as stating that subdural abscess ought not to be expected before two weeks after traumatism, and that the average time is three weeks. In this instance the rupture into the lateral ventricle took place on the seventh day.

The Sterility of the Pus of Abscesses of the Liver and its Surgical Consequences.

In a communication to the Society of Surgery of Paris, Peyrot reports a case illustrating the innocuousness of the pus of dysenteric abscesses of the liver (*Le Mercredi Medical*, Jan. 14, 1891). While operating for the relief of an enormous abscess of this variety in a patient in the Hôpital Lariboisiere, the writer met with an accident through which a certain amount of pus gained access to the peritoneal cavity. With the aid of cocaine anæsthesia, the abscess was opened by direct incision; and after a partial washing of the cavity with a 1–40 carbolic acid solution, an attempt was made to insert drainage tubes, when, by some unfortunate mishap, the relation between the incision in the abdominal wall and that in the liver became so altered that it became necessary to administer chloroform before the latter could be found and secured to the former and the tubes introduced. For twenty minutes this wound in the liver, communicating with the abscess cavity (from which afterward a considerable quantity of pus was washed out), lay gaping in the peritoneal cavity, but the excellent progress of the patient after the operation showed that no harm resulted from the accident. The temperature was no higher than it had been before the operation, and soon fell to normal, the drainage tube was removed at the end of three weeks, a few days later cicatrization of the wound was complete, and the patient left the hospital, cured, at the end of the fifth week.

The explanation of this fortunate result, Peyrot says, lies in the fact, demonstrated by Kartulis in 1887, and since by Laveran and Netter, that liver abscess, consecutive to dysentery, is ordinarily destitute of micro-organisms demonstrable by any known means of investigation. In the writer's case careful bacteriological study of the pus was made by Veillon, but no micro-organisms were discovered. Intra-peritoneal injections in guinea-pigs gave rise to no morbid phenomena whatever.

While the employment of every known means of bacteriological study failed to demonstrate in this pus the presence of microbes, the writer thinks it probable that the dysenteric abscess may be caused by a specific organism which cannot be cultivated on our artificial media. He says, in conclusion, that while the pus may be allowed to escape into the peritoneal cavity, even in notable quantity without danger, the possibility of the secondary infection of these collections by microbes of a dangerous nature must not be lost sight of. Kartulis has found this secondary infection in three cases out of thirteen examined, but Peyrot believes it to be very rare, and suggests the propriety, before operating on these abscesses, of making a bacteriological examination of the pus obtained for the purpose by aspiration.

Acquired Syphilis in a Child Four Years of Age, Probably as a Result of Rape.

Alexander Lyle (*New York Medical Record*, Feb. 7, 1891) reports a case of the above nature, which came under his observation early in January. The only history obtained was, that in November last the child had complained of pain in micturition, when the mother, upon inspection, noticed some swelling of the labia. A week later an eruption appeared upon the neck, and for this a druggist was consulted. When she was seen by Lyle, there were present mucous patches on the lips, the tongue and the inner surfaces of the cheeks; upon the neck there was a papular syphilide of the miliary, the lenticular and the squamous varieties; and about the genitalia and anus condylomata were found. The glandular system showed characteristic involvement, those of the left side of the body, curiously enough, being more affected than those of the right.

Under the "mixed treatment," internally, and the bathing of the condylomata with carbolic acid lotions, followed at first by the application of a mixture of equal parts of bismuth and starch, and, later, of aristol, rapid improvement took place. The conclusion that the disease had resulted from rape was reached by excluding all other sources of infection.

Indications and Technique of the Porro Operation in Rupture of the Pregnant Uterus.

Mermann (*Archiv f. Gynækologie*, 39th vol., 3d part) prefers to deal with a ruptured pregnant uterus by a supra-vaginal amputation, as recommended by Porro, rather than by delivering the child through the vagina and controlling the hemorrhage by tampons, or by making an abdominal section and stitching the rent in the uterus. If the child is delivered from below, the abdominal cavity cannot be properly cleaned, and, as was shown by the case of Winckel, which died thirteen days after delivery, from hemorrhage, the tampon will not control the bleeding with certainty. Even if the tear does not extend through the serosa, it may become necessary to control the bleeding by abdominal section, as illustrated in Leopold's case, where the blood burrowed up through the tissues as high as the liver. Halbertsma reported a similar case.

Mermann attempted a craniotomy on a child after the uterus had ruptured, but found the bleeding so furious that he was forced to perform version. He controlled the hemorrhage by tampon, but the woman died. If a tampon does control the hemorrhage, it is a mere matter of chance; there is no certainty as to the attainment of the desired effect, since the vessels may retract so that the tampon cannot possibly reach them.

The anatomical conditions are not always favorable for suturing the rent. The laceration may extend into one or both broad ligaments, or the fundus may be torn circularly from the cervix, partly or completely. The damaged and possibly septic womb is a further source of danger. The edges of the rent are irregular and bruised and are not easily approximated; the scar left by the healing of the wound predisposes to a rupture and other troubles in future pregnancies, so much so that Battlehner recommends abortion in case of subsequent conception.

The extension of the laceration into the ligaments should be, under all circumstances, in the opinion of Mermann, an indication for the Porro operation. By this procedure the peritoneal cavity is relieved of the septic and injured uterus; all blood, sebaceous material, meconium and liquor amnii are removed; the organs are spared the work of carrying on involution of the uterus; the peritoneum is left in condition to carry on the work demanded of it; the vital powers which have been brought to the verge of collapse are spared all unnecessary strain; lactation ends, and the convalescence is smooth, easy and without fever.

A patient on whom Mermann performed the Porro operation had borne four children; one lived for a short time, the other three were still-born. The true conjugate measured nine cm. (three and three-fifths inches). Five hours after the rupture, which was in the posterior wall, the operation was performed; it was finished in forty minutes; convalescence was uninterrupted and without fever. On the eighteenth day the woman was out of bed. Drainage

was not used, and the stump was treated intra-peritoneally on account of the depth of the laceration, and the amount of force necessary to bring the stump into the abdominal opening. The case proves not only that drainage is not necessary, but that infection need not necessarily take place from the cervical canal.

Operations for Prominent Ears.

Monks (*Boston Med. and Surg. Journal*, Jan. 22, 1891) discusses the treatment of this deformity.

In his first case an attempt was made to reduce the prominence of the ears by keeping them pressed close to the side of the head by means of a spring passing over the top. This contrivance was faithfully tried for several months, but no great improvement could be seen. In the second case a vertical strip of skin and cartilage was taken from behind. The anterior surface was left intact. This operation was successful, although the cartilage took a long while to heal, and a vertical fold of skin was formed on the front aspect of the ear where the cartilage had been brought together. In three other cases an elliptical piece of skin was removed. The result was satisfactory. A girl of 5 years was similarly treated, and the result was satisfactory.

Operations by excision of skin and cartilage are only called for when the cartilage is stiff. It seems almost impossible to perform an operation on the cartilage which will leave no trace of undue prominence, scar or depression. The method by excision of the skin alone is applicable to cases where the cartilage is not too stiff. The shape of the ellipse varies somewhat with the case, the strip being widest where the prominence is most marked. In all cases the inner incision should be close to the bottom of the sulcus. As the cartilage tends to regain its old position after the operation, a broad piece of the skin should be resected; that is, a piece equal to more than half the breadth of the back of the ear. The sutures may be removed from the third to the sixth day. A bandage is to be worn for ten days or two weeks, and for several months a night-cap should be used.

Stenosis of the Trachea Following the Use of Tracheotomy Tubes.

Pitts and Brooks (*Lancet*, Jan. 10, 1891) find that usually when a tube with an upward opening is employed no trouble is experienced, but sometimes some form of mechanical occlusion occurs. The tube rarely fits well if the cricoid cartilage has been divided; a movable collar, however, lessens the amount of irritation; a bivalve tube is apt to cause trouble.

In one case tracheotomy was performed on a child aged 3 years, for marked stridor and difficulty in breathing. A month after the tube was removed, difficulty in breathing again occurred, and tracheotomy was performed. Macewen's tracheal catheters were passed, being introduced first upward from the wound in the throat, but afterward down through the mouth. Seven months later, tracheotomy was again necessary; the tube was worn this time for over a year, when an O'Dwyer intubation tube was put in. This proving unsatisfactory, the wound was enlarged, the thyroid was partially divided, and a band of cicatricial tissue was excised. Somewhat later a fourth tracheotomy was required; this was followed by intubation at intervals for some months, after which he remained well. In this case the cicatricial band formed almost a complete diaphragm; this shows that when simple intubation fails to restore the natural passage an exploration of the wound should be made and all cicatricial tissue removed. The advantages of O'Dwyer's method over Macewen's catheters are sufficiently obvious.

In a second case, attempts at removal of the tube caused distress, so that the wound was enlarged, and some granulation tissue at the front and sides of the wound were removed by means of scissors and a sharp spoon. Intubation was afterward satisfactorily employed.

In a third case, tracheotomy was performed for diphtheritic occlusion. Extensive sloughing followed. Attempts at intubation not being satisfactory, the wound was enlarged, and a dense collar of cicatricial tissue was found occluding the trachea. This was removed, and after intubation the case progressed satisfactorily.

A fourth case left the hospital still wearing the tube, all attempts to dispense with it having failed. Eight months later intubation was tried unsuccessfully. The wound was enlarged, and the trachea was found to be just above the level of the tracheotomy tube, obstructed by a collar of cicatricial tissue, forming a web, with an aperture toward the right. This collar was divided vertically with the scissors in two or three places and a large intubation tube was passed. Later a considerable portion of the collar of fibrous tissue was removed; this operation was repeated and was followed by intubation at intervals of three weeks. Six years later, the patient articulated like a child of three.

In these cases, a certain amount of force in introducing the tube is sometimes absolutely essential. The difficulty of obstruction to the respiration can be overcome by partial withdrawal of the introducer while the tube is kept in place with the forefinger. A larger tube is desirable than in acute cases. One of these cases used a tube for a fortnight without discomfort. Pulp food was found to be the best; liquids caused coughing. Extracting the tube, owing to its unusual length, is the most difficult part; this is partly overcome by making the beak of the extractor shorter.

THERAPEUTICS.

UNDER THE CHARGE OF

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ASSISTED BY

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Hot Water in the Treatment of Disease.

In a paper upon the employment of hot water in hydrotherapy, DURAND-FARDEL (*Bull. gén. de Thérap.*, Feb. 28, 1891) discusses the matter from a physiological and therapeutical point of view, maintaining throughout that hydrotherapic treatment consists chiefly in the application of *cold*.

The author, in reviewing the literature of the subject, opposes the views evidently held by some in regard to the employment of hot water as a therapic method. He argues that the physiological and therapeutical effects of hot water are entirely different from those produced by the cold water applications, and that to disregard cold in hydrotherapy is to forget the significance of the word hot in speaking of fire. To produce a sedative effect upon the system, other than cold water applications should be employed.

Properly speaking, sedation of the economy can only be obtained by the use of hot water baths; while in the cold water treatment, different temperatures may be utilized, according to the indications of the individual case. It is this latter form of treatment, and not the hot water method, that is understood by hydrotherapy proper. The author, finally, does not put aside the advantages sometimes obtained in replacing the cold water by the hot water treatment, believing it, in fact, to be a good practice, but maintains that hot water applications should not be considered as a hydrotherapic medication.

Influence of Wines on Pepsic Digestion.

From an interesting series of researches upon this important subject, HUGOUNENQ (*Lyon Médical*, March 1, 1891) arrives at the following conclusions: (1) All wines, without exception, retard the action of pepsin; the most pernicious are those which are loaded with alcohol, cream of tartar and coloring matter. (2) Of the elements of natural wine, the active coloring matters, together with the cream of tartar and the alcohol, retard or arrest pepsic digestion. (3) The acidity of ordinary wines is powerless to provoke the action of pepsin;

in the majority of cases it does not seem to aid it. (4) The coloring matters fraudulently introduced into wines, such as methyl-blue, azoflavine, solid blue, and especially fuchsine, hinder pepsic digestion. The vegetable coloring matters, such as black mallow, elder, makis, exercise, like enoline, a noxious action. (5) In doing away with a part of the cream of tartar employed in the manufacture of ordinary wine, an element which retards the action of pepsin is removed. Digestion is more rapid under the action of plastered wines than in the presence of ordinary wines. This advantage may serve as an argument to uphold the good effects of plastered wine upon the organism.

Creasote and Guaiacol.

According to Audubert (*L'Union Médicale*, March 12, 1891) creasote and iodoform are the only remedies worthy of being constantly employed in the treatment of medical and surgical cases of tuberculosis. These drugs leave far behind, in point of usefulness, such substances as eucalyptol, hydrofluoric acid, sulphuretted hydrogen, and others.

Sahli has proposed the substitution of guaiacol for creasote, chiefly on account of its being less disagreeable in taste and odor. It has been shown that if guaiacol, as has been claimed, is one of the components of beech-wood creasote, it is not its active principle, and that to other ingredients, such as cresol, creosol, phloral, are due the specific properties of creasote. This remedy can be best given in capsules containing three-fourths of a grain each; in this manner it is well tolerated by patients. In doses of from two to three capsules three times a day after meals, it is supposed to remain in the blood for a long time, in the proportion of 1–4000, a proportion necessary to arrest the development of bacilli. In this way a good number of definite cures have been obtained in patients laboring under the first symptoms of pulmonary phthisis. On the contrary, guaiacol, in such cases, has only produced modifications and slight ameliorations of the disease, such as would be obtained under ordinary balsamic remedies, like eucalyptol, tar, and others.

According to the writer, creasote being a specific poison for the germ of tuberculosis, there is no doubt that it continues to be the chief basis of all the therapeutic combinations employed in the treatment of consumption.

Creasote is likewise recommended in certain cases of morbid dyspepsias, in doses of one and one-half grains before each of the principal meals. The author affirms that the drug is also of great service in the treatment of diabetes. In these cases, doses of three, four and a half and six grains per day have been employed with success. Analyses made of the urine have shown that the sugar has disappeared after a treatment of from three to four weeks.

The Treatment of Chlorosis by Copper.

In an article upon this subject, Liegeois (*Rev. Genér. de Clin. et de Thérap.*, Jan. 7, 1891) reports the success obtained in the treatment of chlorosis by the administration of copper. The author has followed the method employed by Luton in the management of tubercular disease by the same drug. The conclusions previously arrived at by Pecholier and Saint Pierre are referred to. These writers, from an experimental study with verdigris upon the lower animals, and from observations made on individuals working in the manufacture of this salt, affirmed: (1) That a daily and slow absorption of the drug favors the development of corpulence; (2) That women employed in verdigris works are not subject to chlorosis.

These conclusions, apparently thoroughly reliable, led Liegeois to try the remedy in the treatment of the malady in question. The results have been highly encouraging.

The drug was administered to thirty chlorotic, *not anæmic or pseudo-anæmic* women, as in all of them the chlorotic disorder was pronounced. The author employed the aceto-phosphate of copper, in pill form, as recommended by Luton for tubercular cases. If the disease was accompanied with amenorrhœa, menorrhagia or leucorrhœa, three-fourths to one and a half grains of newly-prepared powder of ergot were added to each pill. One or

two pills were given twice daily before meals, and in the intervals fifteen to thirty drops of the tincture of nux vomica were administered. At the end of the meal a teaspoonful of the syrup of mint, with medicinal hydrochloric acid, was ordered also. This constituted the whole treatment.

The patients followed this medication uninterruptedly for one, two and three months, without evincing any deleterious effects. No nausea or vomiting, no gastralgia, or any exaggeration of a previously existing chlorotic gastralgia, was ever noticed. In the course of the whole treatment there were taken 60, 90, 100, 150 and 200 pills of the aceto-phosphate of copper, according to the following prescription :

℞. Neutral acetate of copper . . . . . 1/6 of a grain.
Crystallized phosphate of sodium . . . . . 3/4 of a grain.
Powder of licorice and glycerine, s. q.
Mix and make one pill.

On Glycero-Alcoholates.—A New Method of Administering Active Drugs.

At present the only method of administering active drugs is in the form of granules, but there are serious difficulties in practice with regard to certain alkaloids and glucosides which cannot be too carefully handled. Again, the mode of absorption and the rapidity of action of remedies vary in each particular case. The difficulties have to some extent been avoided by the adoption of certain standard solutions, but the question exists whether these solutions are based upon the volume or upon the weight of the substances used.

A. Petit (*Bull. et Mem. de la Société de Médecine Pratique*, March 1, 1891) proposes a solution which, having exactly the density of water, may be used indifferently, by measure or by weight. It is so prepared that every 1000 cc. may contain the following ingredients:

Glycerine . . . . . 333 parts.
Distilled water . . . . . 147 "
Alcohol, 95°, s. q. to make one litre or 1000 cc. (Three pints.)

One gram or a cubic centimeter of this solution represents exactly fifty drops.

This vehicle has these advantages: (1) It keeps indefinitely; (2) evaporation is rendered difficult owing to the viscidity of the liquid; (3) complete solubility is assured in the majority of cases.

To such solution the name of *glycero-alcoholate* is given. These glycero-alcoholates may be prepared in the strength of one per cent. or of one-tenth of one per cent.

Ten per cent. solutions of the glycero-alcoholates of picrotoxine and of monosulphide of sodium, and one-tenth per cent. solutions of the glycero-alcoholates of crystallized digitaline, crystallized aconitine nitrate, strophanthine, and ouabaine, have already been prepared. As an example, the glycero-alcoholate of crystallized digitaline may be made as follows :

Crystallized digitaline . . . . . 15 grains.
Glycero-alcoholate solution . . . . . s. q. for a litre.

This solution has in practice given excellent results, as it holds the active principle in the most favorable form for its absorption. It is not precipitated by any amount of water. A cubic centimeter of this solution is equal to fifty drops, so that one drop represents 1-50 of a milligram, or about 1-3250 of a grain. In this form digitaline has been found to possess powerful diuretic properties.

A New Treatment for Epilepsy.

The combined use of the bromides with any organic agent capable of depressing the nerve centres, such as Calabar bean, picrotoxine, belladonna, etc., in the treatment of epilepsy, is proposed by V. Poulet (*Bull. général de Thérap.*, March 15, 1891), based on the generally recognized fact that all organic agents found useful in the treatment of the malady in question act similarly on the capillary circulation.

It is worthy of note that Calabar bean, belladonna and picrotoxine, in therapeutic doses, all act like bromide of potassium upon the muscular system and upon the capillary circulation of the nerve centres, thus relieving congestion and preventing hyperæmia. The conjoined action of any of these organic substances and the potassium salt, according to the author, has given the best results in the treatment of epilepsy.

Five cases are detailed, occurring in individuals of from 15 to 65 years of age. The combination of physostigma, or the sulphate of eserine, and the bromide of potassium, and of this and picrotoxine, gave the best results in two of the cases cited occurring in adolescent life; in a third, due apparently to the coming on of the menopause, and in a fourth case, observed in an old lady. In the fifth instance, in which the malady was attributed to the existence of organic cardiac disease, the best effects were produced by a combination of the potassium bromide and digitalis. In this case strophanthus was also used, but with little benefit.

With regard to the doses of the different remedies employed, and taking into consideration individual idiosyncrasies, from 75 to 90 grains of the potassium salt were given to women, and from 105 to 120 grains to men. Of the sulphate of eserine, picrotoxine and the sulphate of atropine, one-sixth of a grain each of the first two drugs and one-sixtieth of a grain of the last one were given. Half a fluid drachm of the tincture of Calabar bean, or twelve and a half grains of the powder, were employed instead of the eserine salt. The alkaloid atropine was replaced by half a fluid drachm of the tincture of belladonna or by eight and one-third grains of the powder of the root. In cardiac epilepsy, digitalis was employed in from twenty drops to half a fluid drachm of the tincture, or in four-grain doses of the powder. In order to avoid disturbances of the stomach, due to the action of the remedies used, these should be administered at the beginning or at the end of each meal.

In conclusion, the author believes that the bromides are the chief remedies to be used in the treatment of epilepsy, and that when patients become habituated to the action of the potassium salts, the employment in combination with those of the organic substances mentioned is productive of the most gratifying results. It was likewise observed that these remedies seemed to prevent the frequent maniacal states following attacks of the *grand mal*, and also to stop the appearance of immediate accidents, such as hemiplegia, delirium, stupor and coma.

Physiological Action of Peroxide of Hydrogen.

In a preliminary paper on "Peroxide of Hydrogen," which he has continued to study since his original investigations published in 1860, Benjamin Ward Richardson (*The Asclepiad*, 1st Quarter, 1891) adds considerably to our knowledge of a drug which has lately claimed much clinical attention. In his physiological researches he finds that "living cell structure of every kind, presented to the peroxide solution, if it does not absorb, liberates the oxygen, and seems to distinguish by that phenomenon organic structure that has become cellular, organic and vital, from that which is not yet cellular or organic, and from that which has passed from the organic and vitalized state to the inorganic and dead." Upon open surfaces meeting with organic material, oxygen is liberated and decomposition produced, a process which is hastened by elevation of temperature and pressure. Again, if introduced within mucous cavities which contain no foreign substance capable of liberating oxygen (*e. g.*, pus), the peroxide is not decomposed. Under these conditions, absorption into the circulation with liberation of oxygen takes place, and if this gas be in too great quantity to be carried away entirely by the red blood discs, it accumulates in the chambers of the circulation and causes death in the same way as air injected into a vein. A similar result follows injection within the peritoneum. Subcutaneously injected, the peroxide is at once decomposed with the production of temporary emphysema and elevation of temperature, with partial arterialization of venous blood, but without important local trouble resulting. When injected directly into the lung, there is diffusion of oxygen, so that life may be supported for several minutes with respiration entirely cut off. Purulent matter and probably the white blood corpuscles liberate oxygen very freely from the peroxide; the author inclines to the belief that bacteria may have the same reducing power.

An Antagonist to Morphine.

In a study of the physiological antidotes of morphine, Kóssa (*Wiener medizinische Wochenschrift*, No. 12, 1891) has lately followed out the suggestion made by Tschudi in 1847, as to the antagonism of picrotoxine. Although this drug strongly excites the respiratory centre, experiments upon narcotized rabbits show that moderate doses of picrotoxine actually contribute to the fatal result because the respiratory muscles are soon exhausted from overwork, while larger doses have a similar effect upon the centre itself. Combination with small doses of paraldehyde, however, serves to lessen the action of the respiratory muscles, and in this way life may be preserved. Upon blood-pressure morphine and picrotoxine have opposite effects. Both drugs decrease frequency of the pulse, but morphine weakens while picrotoxine increases its force. Both drugs lower temperature. In combination with paraldehyde the fall is decided, but recovery takes place.

A Case of Hyoscine Poisoning.

An instructive case of poisoning by this drug is recorded by Adler (*Berliner klinische Wochenschrift*, March 9, 1891). The patient, a chemist, drank water from a beaker-glass, which contained the dregs of a solution of the hydrochlorate of this alkaloid. Fifteen minutes later he felt dizzy, but was able to walk to the house of a friend close by, where he complained of feeling badly and in a few minutes fell asleep, gradually passing into unconsciousness, in which general convulsions developed. It was fully two and a half hours after ingestion of the drug when he was removed to Biermer's clinic. He was then in deep coma, the head was drawn backward, the jaws clenched, and the extremities in active clonic spasms, as also at times were the muscles of the lower jaw. The countenance was wan and livid, the pupils dilated *ad maximum* and immobile to light. Pulse greatly accelerated, 145 to the minute, of small volume and compressible. The stomach was washed out, but no trace of the drug could be detected in the expelled water. Subcutaneous injection of ⅓ grain of morphine promptly terminated the convulsions, but ⅙ grain of pilocarpine muriate failed to stimulate the secretion of saliva. During the next hour the patient began to revive, and passed into a soporose condition, from which he could be momentarily roused by loud noises. Two hours later the pulse had fallen to 104, and a repetition of the dose of pilocarpine was followed by moistening of the lips and tongue. Two hours later still, the patient could answer questions, but failed to recognize his surroundings. This confused condition lasted fully twelve hours. No urine was passed until twenty-four hours after the ingestion of the poison, when two litres were voided, in which hyoscine was detected by the physiological and chemical tests. The mydriasis did not completely subside until four days after the poisoning. The author regards the slowing of the pulse, which was noted at the end of five hours, as an important and favorable sign in prognosis.

The Therapeutic Value of Restricted Drink in Chronic Heart Disease.

In a paper emphasizing the theories advanced by him in 1880, Glax (*Centralblatt f. die Gesammte Therapie*, March, 1891) refers to the later writings of Körner, Oertel, v. Bamberger and others, as corroborating his original propositions. From v. Bamberger's observations he holds it proved, first, that in complete compensation the blood in its composition is more or less normal or contains only a slight excess of water; secondly, that in beginning failure of compensation the watery elements are at least temporarily increased; while thirdly, in advanced failure the blood is thickened in its solid constituents because of a retention of its watery elements in the tissues. In practice he recommends that the amount of ingested liquid should be so regulated that the daily average of urine should represent, at least, two-thirds of it. By this plan he asserts that the heart is relieved, and that the urine is actually increased in quantity, a paradox which he maintains as rational, despite the ridicule brought against it by Von Basch. It is only in cases of extreme failure of compensation that he recommends recourse to digitalis or strophanthus; and in these cases restricted drink will often postpone for a long time the return of œdema after suspension of the drug.

OBSTETRICS.

UNDER THE CHARGE OF

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ASSISTED BY

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On the Relief of Labor with Impaction by Abdominal Section as a Substitute for the Performance of Craniotomy.

Murdoch Cameron (*British Medical Journal*, March 7, 1891) reports ten cases of Cæsarean section with remarkably good results. Nine of the women were saved and only one child lost, which had, however, died before the operation was undertaken. One of the women had twins. In all but one case, the indication for the operation was absolute, and in this single case, the conjugate diameter was a trifle under three inches.

In the course of his article the writer points out the importance of pelvimetry, and says that the general practitioner can easily acquire the ability to estimate the size of the pelvis and should feel himself bound to do so in doubtful cases. We heartily indorse this statement and agree with Cameron that the practitioner who is satisfied, as so many are, to be simply useful about a woman in labor, is little better than an ignorant midwife. It would be better if the same conditions prevailed in this country as in England, in regard to deciding when the operation is demanded. The surgeon, says Cameron, will not assume the responsibility.

"It is only the skilled practitioner or obstetrician who, influenced by principles and principle, can, under such circumstances, give an opinion worth having, as such men do not allow a love of novelty, a thirst for notoriety or a fit of heroics to interfere with their better judgment." Cameron prefers the Cæsarean section and would reserve the Porro operation for those cases in which the uterus had been injured or ruptured by violent and vain attempts to extract the fœtus by the natural passage. He has somewhat simplified the operation by inserting fewer stitches than Sänger, especially the superficial, placing the latter only where they seem required.

The Care of Destitute Women Before and During Confinement, and its Effect upon the Mortality of Infants.

Stapfer (*L'Union Medicale*, March 24, 1891, "Antisepsis in Midwifery") writes upon the necessity of protection from the hands of the community to destitute women, not only during confinement but during their pregnancy. He argues that the proper assistance to the mother before her confinement will do much toward reducing the mortality of infants. The provisions which the State makes for the care of the parturient woman and her child stand in marked contrast to the general disregard which she is supposed to merit at the time of her greatest distress. The question, how to provide for these women, although difficult of solution, nevertheless he considers urgent. He alludes to the proposition of Pinard, who recommends that asylums be founded in connection with foundling hospitals, where the infants of women who are sent out to service may be cared for by those awaiting confinement. He considers that such a measure would prevent the desertion of infants, who, if cared for by the father, are neglected, or if intrusted to the care of indifferent women are deserted on account of the expense of maintaining them. He believes that the most reckless of these abandoned women can be induced by the influence of improved physical and moral surroundings to return to maternal instincts.

In regard to parturient women, the writer proposes for those who prefer assistance at their own homes during confinement, a class of midwives appointed by competitive examination and allowed to practise within certain districts under the direction of medical officers. He alludes, in this connection, to the superiority in two respects of maternity hospitals in

the care of women to registered midwives: First, the lessened danger of septicæmia—contrary to the general belief before the era of antisepsis in midwifery; second, the lessened expense to the State in maintaining hospitals as compared to that of supporting the necessary number of midwives. He urges the importance of thorough instruction to midwives, inasmuch as they constitute an indispensable class (in foreign communities) to whom, on occasions, the gravest responsibilities are intrusted. He writes, "The man who, by giving the necessary time and effort, will consecrate himself to the work of elevating the standard of instruction to this class will render to his country a service comparable to that of the workers who have reformed obstetrical teaching in the schools."

The second part of his article he devotes to an epitome of the antiseptic precautions which should be observed by the doctor, the midwife and the nurse. After giving a general description of the preparation of the hands for an examination, in which he recommends a solution of the bichloride of mercury in preference to the biniodide, he goes into the question of what precautions may be necessary in going from a woman who is suspected of infection, or one who is actually contaminated, to a fresh case. The time of exposure may be variable, but the risk of conveying the infection is always present but proportionate to the tenacity of the germs and the degree of impregnation of the skin by the antiseptic solution which is used. He proves that the liquid in contact with the skin penetrates not merely the layers of the epidermis, but enters the glands, by the following example: If you bathe your hands for a long time in a mercuric solution, then after drying them observe the odor, you will find it to be simply that which is characteristic of the skin. But after a time, when the glands have become active and the cutaneous perspiration has become established, your hands will emit a special, metallic odor, although the solution was without odor. In order to prolong the contact of the antiseptic solution and allow it to penetrate the pores of the skin, it is necessary to submerge the hands for "a quarter of an hour or twenty minutes after washing and using the nail-brush." Instruments should be placed in a large boiler, in the bottom of which is a layer of alcohol which is ignited; after the alcohol has burnt out they are covered by an antiseptic solution. He never employs the salts of mercury in women whose kidneys are functionally defective. He uses them only in moderation in healthy women, because they are, in the first place, irritating, and secondly they have an astringent effect upon the mucous membrane of the vagina, which makes the examination difficult and painful. In addition to the washing of the external genitals in a solution of bichloride and a vaginal douche, he recommends a uterine irrigation in suspected cases. If the child is dead, he gives two intra-uterine douches, one before delivery, in the cavity of the membranes, and another after the birth of the child.

Observations on the Use of Tarnier's Forceps.

Gönner (*Correspond.-Blatt f. Schweizer Aerzte*, 21, Feb. 15, 1891), in a paper read before the Medical Society of Basel, comments upon the prejudice in Germany against the use of Tarnier's forceps. In his opinion one reason for this prejudice is the existence of a national antagonism; but a more important ground for the preference in Germany for the shorter forceps lies in the fact that the German forceps is a more practical instrument than the Levret, and further, that the indications for the use of the forceps in each country are different. In Germany, extraction is seldom attempted when the head has not fully engaged at the brim, while it is the custom in France, as in this country, to apply the forceps earlier in labor, before the head has descended.

The principle of the axis traction forceps has, however, its advocates in Germany, of whom Sänger and Breus have offered a modified form of the Tarnier forceps. The writer expresses his preference for the latter for the high application for the following reasons: By the use of the ordinary forceps, even though we depress the handles as far as possible, the direction of traction must necessarily be more toward the anterior than the direction in which the head descends. Further, we lose in the shorter forceps part of the power applied and injure the woman, inasmuch as we press the head unnecessarily against the anterior part of the birth canal. He maintains that in suitable cases the extraction with Tarnier's

forceps is surer, more rapid and accomplished with much less exertion than in the use of the ordinary forceps. This last is not an unimportant advantage. For instance, in the case of a primipara with unyielding soft parts and inadequate pains, the operator must exert for a long time his full strength, and by this severe physical effort he involuntarily loses the necessary coolness, and thereby runs the risk of making serious mistakes.

The only two important objections to the Tarnier forceps, namely, the difficulty in cleaning them and the danger of compressing the head when the full leverage is exerted, are not insurmountable and are fully offset by their advantages. It is certainly an ingenious recommendation on the part of the writer, and at the same time unusual for a German.

For this reason it should be received with respect, for it proves that he is earnest in his opinion, otherwise he would, by natural preference, have remained an advocate for the principles which, in his own country, are so carefully taught to the exclusion of any gleam of scientific light from the outside.

Early Rupture of Tubal Pregnancy.

Gussner (*Central f. Allgem. Pathologie*) reports the case of a woman, aged 30, who had borne three children, the last nine months before. She had gone ten days beyond her time for menstruation, having been previously regular. She was suddenly seized with crampy pains. A physician was sent for, but before he arrived the patient died.

This is an interesting example of a very early rupture of the tubal sac in extra-uterine gestation, occurring thirty-eight days after the first day of the last menstruation and probably not more than thirty days after impregnation.

The Temperature after Labor and So-called Late Infection.

Stapfer (*L'Union Médicale*, Aug. 2 and 14, 1890) believes that the most valuable index of a woman's condition in childbed is the daily morning and evening record of the temperature. He has noted that a temperature persisting slightly above normal, with a trifling evening rise, is often the precursor of the so-called late infection. A temperature of 100° or 101° may be present on the evening of the first day, due to the fatigue of labor; forty-eight hours later, as the result of the milk secretion. At any time before the fifth day it may occur from fecal intoxication, when the bowels have not been evacuated. This elevation, however, is transient. It is the persistence of a slight elevation to which he calls especial attention, and he believes that in such cases the absorbed poison may be so attenuated as to produce no other symptom for a variable length of time. In one of his cases very slight fever, continuing during three weeks, was the only morbid phenomenon of septic infection.

He believes that the thermometer can predict the occurrence of so-called late infection, such as pelvic inflammation and abscess, phlegmasia, pulmonary and visceral thromboses, cutaneous eruptions, which may occur from the seventh or twelfth day to the fifth or sixth week. When any of these complications are to occur, the temperature ranges between 99° and 101° up to the time of their occurrence, with, perhaps, an occasional temporary fall to normal. Many patients are discharged with this amount of fever unnoticed, who later return to hospital with one of the above complications fully developed. He cites several such cases, and believes it demonstrated that the poison (streptococcus pyogenes) is either encysted and localized, or spreads by the blood giving rise to complications whose nature and gravity depend upon the number and virulence of the microbe and its secretions and the receptivity of the soil. He is convinced that in such cases the three weeks of apparent apyrexia is a veritable period of incubation, revealable by the thermometer, whose value, therefore, is exceedingly great in conditions apparently normal and physiological. In a case with intestinal paresis and considerable distension, severe pain in iliac fossa and over the uterus, anorexia and disappearance of milk secretion, he predicted that the patient was not septic and gave a favorable, and afterward justified prognosis, because the temperature during a week had remained between 97.7° and 99.1°.

Crural phlebitis and pulmonary thrombosis may occur singly, simultaneously or in succession, and although he has most frequently observed phlebitis first, he has seen an infarct of the lung precede phlebitis.

He concludes from his study that the thermometer furnishes results more trustworthy than the pulse, often alone foretelling the onset of complications and affirming in obscure cases whether alarm is justifiable. Its prognostic value is indisputable and its import comparable to repeated weighing of the new-born infant. In the preventive treatment of these accidents by antisepsis, he insists upon the latter, not only for the physician and patient during parturition and the puerperium, but considers antiseptic precautions by the patient during the last months of pregnancy of great importance. There should be morning and evening ablutions of the external genitalia, abdomen and natal fold, and vaginal injections of boric acid or beta-naphthol. During the period of incubation, after delivery, intra-uterine irrigation should be employed and repeated as indicated.

GYNECOLOGY.

UNDER THE CHARGE OF

WILLIAM GOODELL, M.D.,

ASSISTED BY

J. M. BALDY, M.D.

Cancer of the Cervix Uteri with Co-existing Pregnancy.—Vaginal Hysterectomy : Recovery.

Wallace Taylor (*N. Y. Medical Record*, Feb. 28, 1891) can find the record of but twelve cases of vaginal hysterectomy, during the early stages of pregnancy, for cancer of the cervix. He reports the case of a woman, 41 years old, who was married at twenty-four, had six children and two abortions. The last abortion had occurred two years before. When seen, she had missed two periods. She did not consider herself pregnant. She had a marked pallor. The fundus was felt above the pubis, the cervix was as hard as a board, and the whole uterus was inflexible. To the eye, the cervix presented the appearance of malignancy. The uterus was removed by the vagina; and in spite of the fact that the bladder was opened, the woman made a good recovery, and was attending to her work as a peddler within a few weeks, in perfect health. When last seen, she continued well. The extirpated uterus was five inches long. Microscopically, the tumor was quite a typical specimen of cirrhoid carcinoma of the uterus; microscopically, the small cell-groups and coarse dense stroma were quite distinct. The uterus contained a fœtus, one and three-quarters inches long from vertex to breech, of about two months.

Chronic Diseases of the Uterine Appendages.

William Duncan (*British Medical Journal*, Jan. 17, 1891) gives the following opinion as to the treatment of these diseases. (1) When a definite tumor of the appendages is found in the pelvis of a woman who complains of pain and perhaps hemorrhage, an abnormal section should be recommended. (2) If the tumor be a dilated tube, the same course should be adopted, as even a hydrosalpinx may set up peritonitis. Treatment by tapping *per vaginam* or by electricity is not only unscientific but dangerous. In suspected total gestation, operation should be insisted upon. (3) Tubes thickened from chronic salpingitis with tender ovaries, which have resisted medical treatment for two or three months, should be removed, provided the pain is severe enough. (4) If, after one or more attacks of pelvic inflammation, a woman suffers pelvic pain, dysmenorrhœa and dyspareunia, and perhaps menorrhagia, even if no tumor can be felt, an abdominal section will give most satisfactory results. (5) In cases of congenitally ill-developed ovaries, with an acutely anteflexed uterus, associated with marked dysmenorrhœa and sterility, which had

resisted other treatment, he would recommend laparotomy. (6) Whenever, on opening the abdomen, the ovaries and tubes are found fixed by adhesions, the latter should be broken down. If the tube and ovary be then found healthy, they should not be removed. Lastly, as there is usually an absence of disease of the appendages in cases of ovarian neuralgia, an operation is not advisable. The same may apply in great measure to cases of hystero-epilepsy and other mental diseases.

The Treatment of Posterior Displacements of the Uterus with the Utero-Vaginal Ligature.

Boldt (*Medical News*, April 25, 1891) states that the cases in which Schücking's operation for displaced uteri is indicated are those posterior displacements in which the uterus is freely movable, and yet a pessary will not keep it antiposed; or a pessary will keep the organ antiposed only when it is worn, and the patient desires to dispense with its use. Displacements held by moderate adhesions can be first broken loose and then held in proper position by the above method. He does not approve of it for cases of prolapsus. After the operation is performed a suitable pessary should be worn for three months. Altogether 141 patients have been operated upon by this method *without* one serious accident. In Schücking's list there are twenty who were operated upon by his original method, viz., leaving in the suture only ten to fourteen days, and no pessary after operation; here there were eight failures. Klotz has operated twenty-two times without stating the results. Nine cases, operated upon by Boldt himself, show two failures. This he thinks due to the neglect of a pessary after operation. Of fifty-three operations done by Schücking, according to his present method, only two failures occurred; Thieme, fourteen cases, no failures; Zweifel, seven cases, no failures; Ruhl, four cases, no failures; Debeunner, twelve cases, four failures.

The Treatment of Menorrhagia and Metrorrhagia by Electricity.

Goelet (*N. Y. Medical Record*, March 28, 1891) thinks, although these conditions are to be regarded as a symptom rather than a disease *per se*, they are usually of sufficient importance to require separate consideration. Fortunately, the galvanic treatment instituted for the relief of this symptom is generally peculiarly suitable also for the disease or condition which produces it. The strength of the currents which it is safe to use depends much upon the pathological state of the uterus and the surrounding tissues. When associated with a chronic peri-uterine inflammation or exudation it must be used cautiously, never beginning with more than thirty to forty milliampères. For controlling uterine hemorrhage the peculiar hæmostatic action of the positive pole is taken advantage of, and to produce a permanent result a decided caustic action must be obtained. There are two methods of application, viz., either with the platinum sound to the whole length of the canal, or by sectional cauterization. Care must be taken that the whole surface of the endometrium is cauterized, else the cure will not be a complete one. Applications of electricity may be made every other day.

Where fungus endometritis exists, the uterus should be first thoroughly curetted. When hemorrhage follows abortion, the curette should always be used first. When it is due to uterine polyps or submucous fibroids, those tumors should be removed first.

The treatment may be carried on at the office and does not necessitate confinement to bed.

The Treatment of Fibroid Tumors of the Uterus after the Method of Apostoli.

John Homans (*Boston Medical and Surgical Journal*, March 12, 1891) began the treatment of fibroid tumors by electricity in December, 1887. He followed strictly Apostoli's directions to the best of his ability. He purchased a complete electrical outfit, as described by Apostoli, and had a skilled electrician apply the currents for him. He reports the final results in thirty-five cases thus treated, the report of each case being accompanied by a letter from the patient herself, where living. *Size of the tumor.*—In only two of the cases had the

size of the tumor diminished, and these two were cases where the menopause had occurred soon after the electrical treatment. *The general health* had been improved in fifteen cases, had been made worse in two, and death had resulted from the treatment in one. *Profuse hemorrhage* had been diminished to a normal or bearable degree in nine, had been increased in six, and unchanged in nine cases. *Locomotion* had been made easier in sixteen cases, and more tiresome in five. Pain had lessened in six cases, and increased in two; unaffected in five. In sixteen it was not present in the beginning. *The menopause* had occurred in four cases since the treatment began.

Out of thirty cases, ten increased in size and sixteen remained the same; these sixteen were only growing slowly, if at all, at the time the treatment was begun. He has learned enough about the treatment *à la Apostoli* to know that its results are not certain enough to induce him to pursue it as a routine treatment, and that it is occasionally fatal. If the practice of a method, to be efficient and harmless, requires the presence of the inventor as well as his apparatus, then its beneficial effects can only be experienced in the presence of the inventor, and patients must go to him. Such a method can hardly be of general use. He has hardly used his battery during the past year. During the time he has been using electricity he has operated by abdominal section fifteen times for the removal of uterine fibroids, with fourteen recoveries. These were, of course, the *bad cases*, and the contrast of this treatment with that by the electricity is marked.

Thiol in Diseases of Women.

Gottschalk (*Centralblatt f. Gynäkologie*, March 21, 1891) has used thiol in inflammations of the uterus and its appendages for nine months. He treats para- and perimetric exudates with vaginal tampons impregnated with a ten or twenty per cent. glycerine solution of the drug. At the same time he has the abdomen rubbed once daily with a salve containing the same remedy. After the tampon has been placed, the patient, as a rule, feels a "drawing up" of the belly, and there is a free flow of vaginal secretion. The tampon is removed in twenty-four hours and the flow ceases. The local effect of the drug on the skin of the abdominal wall is much the same as that of tincture of iodine. After six or eight days' application it is well to intermit this part of the treatment until the skin has regained its normal condition. Under this treatment, which will eventually be supplemented by the internal use of the drug, large pelvic exudates have disappeared in a few weeks. Up to the present time, Gottschalk has not failed to cure any case of this kind by this treatment, which has passed through his hands. Baths and massage are very useful adjuncts to the treatment.

Inflammatory erosions about the vagina are treated with equal success by dusting them with a dry thiol powder. Acute and chronic endometritis also yield readily to the remedy applied in solution on an applicator. The application is painless and without danger. The uterine colic which follows the use of iodine is not met with. No serious irritation has been observed to follow either the vaginal or intra-uterine applications. At times a slight blood discharge is seen to follow immediately after the treatment, due to the local irritating action of the drug upon the uterine mucous membrane. The mucous membrane is exfoliated after many applications.

The Tampon in Menorrhagia.

W. H. Mays (*Pacific Medical Journal*, March, 1891) asks, "Would you dare to arrest the menstrual flow" in women who were losing so much blood at each period as to be unable to recover from the loss before a new flux set in? He answers his own question by reporting the case of such a patient. He allowed her to bleed until he considered that she had lost all the blood good for her, and then tamponed the vagina thoroughly with pieces of cotton, saturated with an alum solution. This treatment was carried out from month to month, until finally he was only forced to resort to it twice in six months. Each time the tampon was used the flow was completely controlled. The tampon should always be used intra-vaginal and not intra-uterine. The treatment is safe and can be applied by any practitioner.

MISCELLANEOUS.

HIGHER MEDICAL EDUCATION.

HIGHER medical education is the true interest of the public and of the medical profession. Nothing concerns more directly every individual member of the community than that our medical men shall receive a thorough and practical education. In all civilized countries except America, from five to seven years are devoted to this purpose, although their students enter the medical schools with better preliminary education than the vast majority of ours enjoy. In each European country there are only a few schools privileged to confer medical degrees, so that it is easy to maintain a high standard. But in this country there are hundreds of medical schools intrusted with this great power and high responsibility. Keen competition keeps down the standard. Until a few years ago it was the rule that only two years' study was required. Conscience revolted at this shocking laxity, and a few schools advanced their standard and established a three-year obligatory graded course of medical study. It was done in the face of much opposition, but it was done successfully, and to-day no medical school has any standing which has not adopted the three-year course. It was known to all who had studied the subject that this advance was but the first step. The number of subjects to be taught has increased; the methods of medical instruction have grown more exacting and thorough; above all, it is felt that no student should receive a degree which empowers him to enter on the most responsible work of practising medicine unless he has had ample bedside instruction in every branch of his profession. It is simply impossible to do this in a three-years' course. Students are overworked in the attempt. The more complete the facilities possessed by any school the more evident has it become that one more advance must be made to enable the student to profit by his opportunities and to become a well-trained physician. The old cry is still raised that there were eminent doctors in former days who had studied only two years, and that those who graduate now with three years' training succeed well in their profession. But everyone who advances this argument knows how specious and hollow it is. It is universally admitted by the public and the medical profession alike that it is impossible to-day to give a thorough medical education in less than four full years of actual work in lecture-room, laboratory and hospital.

The Medical Department of the University of Pennsylvania is the oldest and most distinguished medical school on this continent. The stand taken by this school more than fifteen years ago, in lengthening the term and raising the standard of medical study, produced the most conclusive effect, because it was attended with such brilliant practical results. Ever since that time its graduates have distinguished themselves by unequalled success in all professional competi-

tions. The advance was effected only by great sacrifices and exertions on the part of the Faculty. All high-grade, scientific education is costly and demands great facilities and increased labor. So it will be again. The school which puts into operation a full four-year graded course of medical study must be ready to meet increased outlay and lessened income from students' fees, for some years at least. But what is resigned in mere pecuniary profit will be many times over compensated by the lasting influence for good exerted.

On May 21, 1891, the following letter was submitted to the Medical Faculty and Trustees of the University :

1811 SPRUCE STREET.

To the Board of Trustees and the Medical Faculty of the University of Pennsylvania :

The approaching completion of the Laboratory of Hygiene calls attention to the pledges given to Henry C. Lea, Esq., by the Trustees and Faculties of the University. These pledges included a sum of $200,000 for equipment and endowment; the appointment of Dr. Jno. S. Billings as Director of the Laboratory and Professor of Hygiene; the introduction of Hygiene as an obligatory study in certain courses; and finally, after compliance with the above conditions, the inauguration of an effort to secure a fund of $250,000 for the endowment of the Medical Department of the University for the purpose of establishing an obligatory four-year medical course. It now becomes our duty to undertake the last of these obligations.

It cannot, I fear, be reasonably expected that this latter large sum of money can be actually obtained in interest-bearing securities in less than three or four years. Meanwhile, the arguments in favor of the early establishment of the four-year course appear to be gaining force. All will admit the impropriety of yielding to these arguments, however, in the case of the University, unless ample provision is made to secure the permanent and successful continuance of the movement. If, therefore, the four-year course is to be started in the near future, it would seem desirable that, while the effort to raise the $250,000 for permanent endowment is being resolutely prosecuted, it should be accompanied with the raising of a guarantee fund to cover any actual deficit resulting from the operation of the new course. Careful consideration indicates that no less an amount than $20,000 per annum for five years would suffice for this purpose.

Being impressed with the urgent importance of higher medical education, and believing that it is the duty and the privilege of the Medical Department of the University of Pennsylvania to be the leader in this the final reform of medical education in America, I beg to submit the following proposition: That on condition the University shall decide and announce, before June 1, 1891, that a four-year obligatory graded course of medical study shall be established on or before September 1, 1893, I will subscribe toward a permanent endowment fund of $250,000, for the Medical Department, the sum of $50,000, subject to the conditions below recited; and toward a guarantee fund of $20,000 per annum, for five years, the sum of $1,000 annually during that period.

The conditions attached to this offer are: That the endowment and guarantee funds shall be fully subscribed before January 1, 1893; that the endowment fund may be subscribed to be paid in annual instalments extending over not more than five years; that a certain number of additional free scholarships be established in the Medical Department, and that the particular feature in the endowment of the Medical Department to which this subscription of $50,000 shall be devoted is to be announced later.

Yours faithfully,

WILLIAM PEPPER.

The Medical Faculty of this venerable school have again shown the devotion and courage which made them pioneers in the former advances. They have promptly pledged themselves to establish a four-year obligatory graded

medical course in 1893. The Laboratory of Hygiene will be opened in February, 1892. This admirable institution will afford facilities not to be found elsewhere in America. The establishment of the four-year course will enable all students to pursue thorough courses in hygiene, bacteriology, etc., under the distinguished teachers, Dr. John S. Billings and Dr. A. C. Abbott, who leaves Johns Hopkins University to take the position of Assistant Director.

The Laboratories of Chemistry, Pathology and Histology are unequalled in size and completeness of equipment. The clinical facilities offered in all branches will vie with those of the great European schools. During the coming summer a great central heating and lighting station will be constructed, and electric lighting, steam-heating and admirable ventilation will be provided for the medical buildings.

It is intended to raise a guarantee fund of $20,000 annually for five years; already about one-half of this has been subscribed by the members of the Medical Faculty. A permanent endowment fund of $250,000 must also be secured. It cannot be doubted that the offer of Provost Pepper will be effective in this direction. The Board of Trustees has judiciously postponed its assent to the proposed advance until the success of both funds is assured. Every friend of sound education and of humanity should aid in carrying this through, for it will remove a source of reproach, and will set an example which will result in the general elevation of the medical profession, and therefore in promoting the true interests of the public.

THE ANNUAL MEETING OF THE ALUMNI SOCIETY OF THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA.

THE twenty-first annual meeting of the Society was held at Natatorium Hall, Broad Street below Walnut, on the evening of April 30, 1891. The meeting was largely attended; routine business being transacted, including the election of officers and an executive committee to serve for the ensuing year. Dr. Stillé read the following announcement of Professor Leidy's death:

"GENTLEMEN: Before entering upon the stated business of the meeting, I feel it my duty, officially, to announce to you the death of Professor Leidy, which took place this morning.

"Since the death of Benjamin Rush, in 1813, no loss, so serious as this, has befallen the Medical Department of the University. One after another of its professors who have distinguished themselves and maintained the reputation of the School has passed away, leaving a more or less visible and painful gap in its history. But only twice, can it be said that the loss was irreparable. The death of Rush was the extinction of the most brilliant genius that ever illuminated the School. By the death of Leidy, it loses the profoundest and most consummate teacher that ever held its chair of anatomy, and whose fame as a comparative anatomist, paleontologist, geologist, zoologist and botanist was not

bounded by his native city or country, but was co-extensive with the civilized world. No man who had such reason to be proud was ever more humble. His simple and amiable manners attached to him the old as well as the young, and made him revered in the gravest circles of the learned, and loved by the students, whom he inspired by his example and enriched by his knowledge.

"During the twenty years that I was his colleague in the Medical Faculty, I never saw him ruffled in temper, negligent of duty, or tempted by any influence to deviate from the straight path that his conscience had traced out for him.

"A man so learned in natural science, whose boundaries he enlarged; so accurate and thorough in the branch that he taught; so simple, blameless and pure in his life, may well stand for us and our successors as an example to be admired, honored and imitated by all who can comprehend the exceeding value of knowledge that is allied with uprightness and truth.

"I trust that at the proper time, this Society will place upon its records a fitting tribute to the memory of this illustrious teacher and philosopher."

At the dinner, which took place immediately after the meeting, two hundred and four alumni sat down, the graduating class being largely represented.

The only speech made was one by Dr. Pepper, in which he paid an eloquent tribute to the memory of Professor Leidy. After this, a silent toast to Leidy's memory was drunk, and the company disbanded; the regular toasts being omitted in deference to the sense of loss and sadness which was felt by every alumnus.

The following officers were elected at the business meeting: *President*, Alfred Stillé; *Vice-Presidents*, Meredith Clymer, W. S. W. Ruschenberger, Traill Green, D. Hayes Agnew; *Secretary and Treasurer*, Joseph P. Tunis; *Executive Committee*, Horace Y. Evans, John Ashhurst, Jr., Samuel Ashhurst, R. A. Cleemann, Samuel S. Stryker, Roland G. Curtin, De Forest Willard, Wharton Sinkler, S. R. Knight, S. D. Risley, Wm. Barton Hopkins, John H. Musser, Charles M. Seltzer, Thomas R. Neilson, Hobart A. Hare, Elliston J. Morris, Benjamin B. Reath, Jr., Henry B. Taylor, Henry H. Doan, Newell L. Johnson.

"INTERNATIONAL CLINICS."

J. B. Lippincott Company will, beginning with April, issue quarterly thereafter a work entitled "International Clinics." This work will comprise the best and most practical clinical lectures on medicine, surgery, gynecology, pediatrics, dermatology, laryngology, ophthalmology and otology delivered in the leading medical colleges in this country, Great Britain and Canada. These lectures have been reported by competent medical stenographers, and thoroughly revised by the professors and lecturers themselves. The object of the work is to furnish the busy practitioner and medical student the best and most practical clinical instruction in concise form. Each volume will consist of over three hundred and fifty octavo pages, illustrated with photographic reproductions of important cases.

"THE CLIMATOLOGIST."

ARRANGEMENTS are almost completed by which it will be possible to issue the first number of this magazine in July, 1891, following this with a number every month. The object of this journal is to promote original investigation, to publish papers containing the observations and experience of physicians in this country and Europe on all matters relating to climatology, mineral springs, diet, preventive medicine, race, occupation, life insurance and sanitary science; supplying the means by which the general practitioner and the public at large will become better acquainted with the diseases of this country and Europe, and better armed to meet the requirements of their prevention or cure.

THE PHILADELPHIA POLYCLINIC HOSPITAL.

As evidence of the liberal spirit with which the Philadelphia Polyclinic Hospital is managed, it has been decided that the full privileges of the wards, private rooms and suite of operating-rooms may be extended by any member of the staff to physicians not connected with the institution. Many physicians who are not attached to hospitals have, frequently, cases that they would like to have under the auspices of a hospital, with its resident physicians, trained nursing and sanitary *régime*, and yet wish them under their own observation.

Patients thus admitted to this hospital are attended by the physician, for whom the case is admitted, as fully as if he were a member of the staff. The admission blanks must invariably be signed by a member of the staff, who thereby assumes the responsibility for the acts of the physician, after which arrangements and terms may be made with the matron. Visitors are cordially invited to visit and inspect the hospital, on Lombard Street, above Eighteenth, on Monday, from 3 to 4 P.M.

DEATH OF DR. JOSEPH LEIDY.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy and Zoölogy in the University of Pennsylvania, died at his home, after a brief illness, Thursday morning, April 30, 1891.

Joseph Leidy was born in Philadelphia, September 9, 1823. His parents were natives of Pennsylvania. His ancestors, however, were Germans, from the valley of the Rhine. His taste for natural history was exhibited at an early age, even as a boy, collecting minerals and plants, his knowledge being obtained from frequent excursions to the neighboring fields of Northern Liberties and Spring Garden. His early education was obtained from tutors and private schools, his knowledge of languages being acquired while he was quite young. Before graduating he walked to Moosehead Lake, Maine, to study the country from a botanical and geological standpoint. He graduated at the University of Pennsylvania in 1844, presenting as his thesis an essay on "The Comparative

Anatomy of the Eye of Vertebrated Animals." In 1846, he was appointed Demonstrator of Anatomy in the Franklin Medical College, and gave his first course of lectures on microscopical anatomy in the spring of 1849. In 1852, he lectured as a substitute for Dr. Horner; on his death Dr. Leidy was appointed Professor of Anatomy in the University of Pennsylvania, 1853. In 1871, he was appointed Professor of Natural History in Swarthmore College. His first published communication, entitled "Notes on White Pond, Warren County, N. J.," was presented to the Philadelphia Academy of Natural Sciences in 1845, in which year he was, a short time before, elected a member. Communications from him to the Academy were, in these early years of his membership, given in rapid succession; the anatomy of spectrum femoratum, new species of entozoa, the mechanism which closes the wings of grasshoppers, and new species of planarian worms, were among the subjects claiming his attention. In 1846 he recorded the occurrence of the trichina in the hog, an observation which led Leuckhart to trace the development of trichina in the hog and man. In 1847, he published his first paleontological paper "On the Fossil Horse of America," establishing clearly the prehistoric existence of this animal in America. Numerous papers followed on minute human and comparative anatomy, the discovery of many new forms of entozoa and entophita, contributions to helminthology, a beautifully illustrated monograph entitled "A Flora and Fauna within Living Animals," and other papers of paleontological interest, including an elaborate work on the "Ancient Fauna of Nebraska." In 1869 and 1873 appeared his remarkable memoirs, entitled "The Extinct Mammalian Fauna of Dakota and Nebraska," and "The Extinct Vertebrate Fauna of the Western Territories." In later years Dr. Leidy turned his attention to the fresh-water rhizopods of North America, and published, under the auspices of the United States Geological Survey, a superb monograph on this subject. In 1880, the Boston Society of Natural History awarded Dr. Leidy the Walker Prize of 1879, "for his prolonged investigations and discoveries in zoölogy and paleontology," and in consequence of their extraordinary merit, the sum was raised from $500 to $1,000. Dr. Leidy published, in 1861, his "Elementary Text-book on Human Anatomy." With the unerring eye of a great teacher, he swept away all the useless portions of anatomical nomenclature and adopted a style so clear and direct as to have made the book a classic.

It was the privilege of Dr. Leidy to live in an age when biology grew into a mighty science; with its strides he kept pace; to its knowledge he added the products of the intricate forces of a great mind. His work, which he lived to see completed, was done at a time when enormous opportunities were offered to minds great enough to grasp them, before the day of the narrowing specialist. In this his life was fortunate. But great as our admiration is for him as a scientist, it was as a man, noble in his simplicity, deeply religious in nature and perfect in his honesty, that the graduates of the University love to remember him and honor his memory.

THE COMMENCEMENT OF THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA.

THE Commencement Exercises of the Medical Department of the University of Pennsylvania were held at the Academy of Music on Friday, May 1st, 1891, at 12 o'clock noon. Provost Pepper conferred the degree of Doctor of Medicine upon 134 graduates of the Medical Department, and the degree of Doctor of Dental Surgery upon 84 graduates of the Dental Department. The valedictory was delivered by Dr. James Tyson, Professor of Clinical Medicine.

The Alumni Medal to the member of the Graduating Class attaining the highest general average in examination was awarded to Edward C. Ellett, of Memphis, Tenn.; the *Medical News* Prize of $100, for the best thesis, to Joseph Sailer, of Philadelphia, for his thesis on "The Action of Ouabain;" the prize of $50, offered by an alumnus for the best thesis on any subject connected with pathology, was awarded to H. M. Hiller, Jr., for his "Clinico-Pathological Study of the Lateral Closure of Incomplete Wounds of the Veins;" the award of distinguished merit being given to G. S. Woodward for his thesis on the "Digestion of Gluten Casein." The following theses were deemed worthy of honorable mention: "Foreign Bodies in the Brain," by H. B. Luhn; "Choctaw or Jungle Fever," by J. A. McIlwain; "Acetonuria," by G. Metzler. A prize of $100 to the member of the graduating class, passing a special examination in practical pathology, was awarded to Charles G. Stivers, of Philadelphia, with honorable mention of J. C. Bloodgood, A. O. J. Kelly, F. S. Pearce, E. C. Ellet, A. W. Baugh, G. H. Richardson, H. Williams, J. A. McIlwain, P. W. Willis and G. Metzler. A prize of a pocket case by Dr. John B. Deaver, Demonstrator of Anatomy, for the best record of anomalies found in the dissecting room, was awarded to P. W. Willis, Walla-Walla, Washington.

The following prizes were awarded by Dr. H. R. Wharton, Demonstrator of Surgery: A surgical pocket case, for proficiency in fracture dressings, to P. W. Willis, of the graduating class, with honorable mention of J. P. Blackburn, T. A. Claytor, C. C. Ross and A. T. Webb; a surgical pocket case to H. B. E. Muth, of the first year class, for proficiency in bandaging, with honorable mention of C. H. Minor, Emil King, J. D. Steel and F. F. Simpson. A prize of a copy of Ashhurst's Surgery, by Dr. Richard H. Harte, Demonstrator of Osteology, was awarded to John Mulfred Swan, Jr., of Newport, R. I., of the first year class, for the best examination in osteology, with honorable mention of James P. Hutchinson and Thomas S. Kirkbride, both of Philadelphia. The Zentmayer Prize of a microscope, for the best examination in histology and embryology, was given to William G. Spiller, of Philadelphia; a prize of a copy of "Jacobson's Operative Surgery," by Dr. Edward Martin, Instructor in Clinical Surgery, for the best thesis based upon a clinical study of cases, was awarded to Henry B. Luhn, Fort Spokane, Wyoming; a prize of a pair of obstetrical forceps to the member of the graduating class furnishing the best report of a case occurring in the University Maternity Hospital, was awarded to F. S. Pearce, Steubenville, Ohio.

THE MEDICAL AND SURGICAL REPORTER.

THE *Medical and Surgical Reporter* for April 25, 1891, contains an editorial in which the editor, Dr. Charles W. Dulles, announces the severance of his connection with this journal. Dr. Dulles has administered the arduous duties of editor and publisher for four years, and his many friends and the subscribers of the journal throughout the country will regret that he no longer finds himself able to continue in the position which he has so acceptably filled. His duties will be assumed by Dr. Edward T. Reichert, Professor of Physiology in the University of Pennsylvania, whose contributions to the literature of physiology and experimental therapeutics are well known and widely read, and whose numerous excellent papers in the UNIVERSITY MEDICAL MAGAZINE are, no doubt, fresh in the minds of its readers. We bespeak for Dr. Reichert in his new field of work the heartiest support, bringing to it, as he does, a trained mind, a ready pen, a fund of information and the tireless energy that have characterized all his previous work.

CORRESPONDENCE.

THE PRESENT POSITION OF ANTISEPTIC SURGERY.

THE *British Medical Journal* of April 11, 1891, contains a reply by Mr. Tait to the letter of Prof. White, published in the April issue of the UNIVERSITY MEDICAL MAGAZINE. This latest publication of Mr. Tait is given below, to which is added Prof. White's final response:

SIR: The allusion that I made to Professor White's unnecessary readiness to take Sir Joseph Lister's place in an argument upon this subject will be found to bear an altogether different meaning from that forcedly put upon it by Professor White. My article was the criticism of Sir Joseph's address in Berlin, where my own arguments were not only not ignored, but were pointedly alluded to and by name. That, however, is a matter of no consequence. Professor White's unnecessary and inconsequent intervention was due to what he calls "an abiding faith"—a singular corroboration of the criticism I advanced against the whole antiseptic doctrine fifteen years ago. Its analogy can be found only in theological metaphysics. It is like the doctrine of "innate ideas"—it requires "an abiding faith"—and when that has been acquired, its recipient is wholly beyond the province of ordinary reason. I accept—I have often used as one of my strongest arguments—"the every-day facts of the surgical ward." It is precisely because I see the cut of the morning shave heal without suppuration in a healthy man, because I know that simple fractures heal without it, as do contusions without loss of continuity, and because of a hundred other daily facts of surgical experience which are ignored by the "peculiar people" of the "abiding faith," that I laugh at the whole thing.

The facts of the "beef-and-pickle" argument and those of the "henwife and housewife" are quite familiar to everybody in this country, and, taken together with those of the every-day practice of surgery, they prove three things: (1) that the germs of putrefaction exist, with restrained potentiality, in all living tissue; (2) that the restraining influence is what we call, for want of a better name, vital force; (3) that when the restraining influence has its balance upset by what we call disease, lowered vitality, accident, etc., the germs are let loose to work their evil wills. This is the fundamental pathology which I was taught as a youth, and my mature experience confirms it every day in every particular.

One matter aside. Professor White complains of my attack on the deadly and dangerous character of the double cyanide dressing. I have had no experience of it, and my objection certainly was *a priori*. But with the awful experience we have had of the poisonous effects of carbolic, have we not reasonable grounds for fearing in a "double cyanide" something far worse? The part of the whole business of the antiseptic processes, where ridicule becomes the most potent, indeed the only argument, is that when we have seen, every few months, an infallible nostrum introduced, adopted by those of the "abiding faith," sworn to as the perfection of the system, and then, *incredible dictu*, dropped into oblivion without a word of explanation or apology. Ordinary, plain-sailing, every-day folk, like myself, were charmed with the idea of the spray. It seemed so complete, so logical, that the confession on the part of Sir Joseph that he was ashamed of it put the final stone on the cairn of antisepticism. I am, etc.,

Birmingham. LAWSON TAIT.

SIR: Mr. Tait reiterates but does not add to his previous argument. His interesting observation of the innocuous effect of the "cut-of-the-morning shave" is merely confirmatory from the masculine standpoint of the great truths already made clear to him by the experience of the opposite sex, embodied in the "facts of the henwife and housewife." On this broad basis of generalization, he erects a "fundamental pathology" which he condenses into three propositions, embracing views as to "restrained potentiality," "vital force," and the "evil wills" of the germs of putrefaction—a sort of pathological metaphysics at least as irrational as the theological variety to which he objects.

The fact that he practically ignores the evidence I ventured to bring forward, and the authorities I referred to, renders further argument useless.

Something has been gained by his confession that he described the double cyanide dressing as "deadly and dangerous" on *a priori* grounds solely, and without having had the very least experience with it.

By the side-light which this ingenuous admission throws on Mr. Tait's mental processes. I would be led, were I truly a metaphysical theologian, to conclude this final contribution to my side of the discussion by preaching him a short sermon, taking as my text the saying of Confucius: "To know that we know what we know, and that we do not know what we do not know, is the sum of all human knowledge." I am, etc.,

Philadelphia. J. WILLIAM WHITE.

CANTHARIDIN.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE.

GENTLEMEN: *Nihil sub sole novum*, says the wise man; and he adds almost immediately, *non est priorum memoria*. Nevertheless, the memory of an old proverb may be now and then brought to mind when something under the sun is claimed to be new. It may be found, too, when something is claimed to be new that it is because the old is unremembered.

A few years ago Dr. Liebreich made some stir in the medical world by the discovery of lanolin, the grease of sheep's wool, which he employed in skin diseases. He took out a patent for it with Messrs. Jaffé & Darmstädter, and a good business was made out of it. This lanolin of Dr. Liebreich was well known to the ancients, and was recommended by Pliny for the very purpose for which it is used to-day, as anyone will see in the *Naturalis Historiæ*, Lib. xxix, Chap. ii.

This year Dr. Liebreich comes out with a new discovery, a remedy against tuberculosis, threatening to supersede Dr. Koch's. It is called *Cantharadin*, the active principle of Spanish fly. We find in Pliny various facts in regard to the use of cantharides, particularly in Lib. xxx, Chap. ix, showing that preparations of this remedy were employed for the same purpose for which it is recommended by Dr. Liebreich.

We may, perhaps, soon hear of *ovin* having been discovered, as Pliny extols the great efficacy of eggs in erysipelas, burns and pimples. See Lib. xxix, Chap. iii, *De Ovorum Natura*.

PHILADELPHIA. WALTER F. ATLEE, M.D.

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ORIGINAL ARTICLES.

FISTULA OF THE DUCT OF STENO.

By D. Hayes Agnew, M.D., LL.D.,
Emeritus Professor of Surgery, University of Pennsylvania.

Fistula of the duct of Steno may result from a variety of causes, as wounds, abscesses, calculus, and sloughing of the cheek from salivation, and other destructive forms of ulceration.

After a fistula is once established, it is exceedingly difficult to cure by any of the measures ordinarily recommended in surgical works. The difficulty arises from the fact that the precedent inflammation destroys the distinctive tissue-planes of the cheek, blending them together in a continuous bond of connective tissue, in consequence of which the saliva finds its way between the edges of any approximation ordinarily practised for closing the opening. It is this unifying of the anatomical elements of the cheek which makes the difference in the treatment of recent wounds of the duct and fistula. In the former, a neat apposition of the edges of the cut, maintained by the necessary number of interrupted sutures and the ordinary dressings, secures union, as readily as in wounds in other parts of the body.

For the treatment of this form of salivary fistula, the different works on surgery repeat, for the most part, the same methods. These methods consist in paring the sides of the fistula and bringing them together by sutures; by cutting out all the tissues of the cheek, around the fistulous orifice, by an instrument closely resembling a punch, and then closing the opening by stitches; by

introducing a probe, armed with a silk thread, into the duct, one end of which is to be brought out through the mouth and the other through the cheek; again, by inserting into the duct a grooved probe, in order that the former may be slit up, and finally by plastic operations and by cauterization. I have seen and done most of these operations without any satisfactory result, and, after failure, have succeeded in effecting a cure by a method which, as far as I know, is new, and is as effective as it is simple. Everting the cheek with the thumb on the inside and the fingers on the outside, a curved needle armed with a silk thread is carried beneath and around the duct, a short distance posterior to where it opens into the mouth, both the entrance and exit of the needle being on the mucous surface of the mouth, and not deep enough to reach the integument of the cheek. The needle is now detached from the thread, and the ends of the latter, after being tied together, are brought out of the corner of the mouth and secured to the outside of the face by a strip of adhesive plaster. As the thread ulcerates its way through the included tissues, the duct is separated from the cheek, causing the saliva to flow into the mouth, and is quickly followed by closure of the fistulous orifice on the cheek.

EXTRA-UTERINE PREGNANCY, FOLLOWING DILATATION OF THE CERVIX FOR DYSMENORRHŒA AND STERILITY: TREATMENT BY ELECTRICITY: FINAL RESORT TO ABDOMINAL SECTION: RECOVERY.[1]

By Morris J. Lewis, M.D.,

Physician to the Pennsylvania Hospital.

Mrs. ———, 28 years of age. Two members of her family, her sisters, have albuminuria. As a child, patient enjoyed good health. Menstruation began at usual age; the periods were regular, and the flow normal in amount, but always accompanied by great pain. In 1882 she was married, and shortly after this, some operation was performed upon her, which was, probably, the removal of a rigid hymen and stretching of the vagina, as the latter was said to have been unusually narrow. A few weeks later, a second operation was performed, which was said to have been stretching of the uterine canal, but this is doubtful, as but little pain was caused thereby, and but slight relief followed as far as the dysmenorrhœa was concerned.

The patient was first seen by the writer in 1887; she was still suffering from dysmenorrhœa, and complained of symptoms of dyspepsia, although presenting every aspect of health. In 1888 she began to have a sense of weight and dragging in the lower abdomen with considerable leucorrhœa. Examination showed that the vagina was normal; that the uterus was in the proper position, but that the vaginal portion was conical, while the os was so small that it would not admit the tip of the uterine sound. An erosion, as large as the

[1] Read before the College of Physicians, January 7, 1891.

thumb-nail, entirely surrounded the os, and there was considerable glairy discharge. Marked discomfort was caused by lifting the uterus on the finger, but no fixation of the organ existed, and there was no ovarian tenderness. After a few weeks of treatment, which consisted of keeping the bowels lax, hot douches and the occasional painting of the vaginal vault with tincture of iodine, conjoined with the internal administration of iron, the leucorrhœa ceased, the erosion healed, and the patient felt well, with the exception of the dysmenorrhœa.

As she had never been pregnant, and was very anxious to become a mother, it seemed that the operation of stretching the uterine canal was indicated not only for the sterility, but also to relieve the dysmenorrhœa. Dr. Barton C. Hirst was called into consultation, and, on November 19th, 1889, the patient was etherized, and the canal thoroughly stretched a week before the expected menstruation, which appeared at the proper time, November 26th, and was entirely painless. She made a rapid recovery without an unfavorable symptom.

The second menstruation began on December 28, and lasted until January 2, 1890; it was free and accompanied by a good deal of pain. In the latter part of January there was a third menstruation, but this was so slight that the napkin was barely spotted; a "coffee-colored stain" only. Early in February she began to have nausea and vomiting, and on the 16th of the month she had slight abdominal pain. An examination on the 17th revealed the fact that the breasts were enlarged and contained colostrum, that the areolæ were darkened and widened, that the glands of Montgomery were developed largely, and that a streak of pigmentation extended from the pubes to the umbilicus.

There was considerable uneasiness in the right inguinal region, which had been present, but to a less degree, for a week; pressure in this neighborhood caused some pain. There was no fever, but the tongue was quite heavily coated, and the bowels were constipated. The patient was given small quantities of calomel and soda every two hours for several doses, and this was followed by a saline. She was told that she was, in all probability, in the seventh week of pregnancy, dating from the December menstruation. Unfortunately, no vaginal examination was made at this time. The next day, after a free evacuation of the bowels, she felt much easier, and on the 19th felt sufficiently well to ride some distance to court to appear as a witness. While in court she was seized with a violent pain in the right inguinal region; she almost fainted, and had to be carried home.

When seen by me, a short time subsequently, she was in a state of shock, but there were no signs of internal hemorrhage. A small tumor could be felt to the right of Douglas's pouch, the neck of the uterus was softened, and the organ pushed somewhat to the left. The diagnosis of probable extra-uterine pregnancy was made, and Dr. Barton C. Hirst again called into consultation; the patient was etherized and examined carefully *per rectum et vaginam;* the cervix was found softened, the uterus anteflexed and pushed to the left-hand side. A tumor could be felt in the position of the right broad ligament, the shape and direction of the tube, apparently as large as a lemon.

The diagnosis of extra-uterine pregnancy of the tubal variety was verified. It was decided to use electricity as the treatment, and to watch for any signs of internal hemorrhage. All arrangements for abdominal section were made, in case this procedure should be deemed necessary. Dr. G. Betton Massey was called in to attend to the electrical treatment, which was carried out as follows:

Notes of Electrical Treatment made by Dr. Massey.

February 20. Examination showed a tender mass to right of uterus. Vaginal negative galvanic application, 100 milliampères for eight minutes, inclusive of increase. External

electrode on abdomen over tumor and internal pressed against mass. Temperature at this time 100° F.

Feb. 21. Vaginal faradic, total strength of Flemming's No. 3 battery, for eight minutes, electrodes as before. Temperature normal.

22. Galvanic, as before, 100 milliampères for five minutes, slight discharge. Temperature normal.

23. Faradic, as before, eight minutes—mass freer and more easily defined. Temperature normal.

24. Galvanic, as before. 100 milliampères for five minutes.

25. Faradic, as before, for eight minutes.

After the third day of electrical treatment there was a considerable amount of watery fluid discharged; this was examined upon the napkin, and thought to be liquor amnii; the tumor at this time became sensibly smaller.

After the sixth day of electrical treatment it was found that the uterus was enlarging, and it was feared that there might be a mistake in the diagnosis, and the case, after all, have been one of uterine pregnancy with accompanying tubal trouble. The electricity was therefore suspended, and all present were unanimous as to the uselessness of further treatment in this direction, considering that if the end hoped for (viz., the destruction of the vitality of the fœtus) was not already attained, electricity had failed as a method of treatment for this condition.

No marked discomfort was caused by this treatment, except during the passage of the current, and even this was perfectly bearable. The urine, which, previously to the pregnancy, had been normal, presented on February 23d the following condition: Amount in twenty-four hours, twenty-eight fluid ounces. Albumin in considerable quantity. Microscopic examination revealed numerous pus corpuscles and several granular and hyaline casts. One week later no albumin could be detected, although on March 3d it appeared again with a reappearance of pus, but no casts could be discovered; the specific gravity was 1030. Subsequent examination showed that the urine had become normal.

From the 27th of February to the 5th of March was a period during which decidua was passing; every napkin and every particle of decidua was carefully examined, and no evidence of fœtal tissue was found. A microscopic examination of the material passed confirmed this view.

On March 8 the following note was made by Dr. Hirst:

Uterus in middle line, firm, about the normal size, almost normally movable. Tenderness at right cornua. A small tumor to right of Douglas's pouch, size of an English walnut, (ovary?) tender and adherent.

The treatment up to this time, exclusive of the electricity, had been mainly expectant. The diet was plain, and the bowels were kept open by Epsom salt in small doses. On March 9th she was allowed to sit up for the first time, and on March 15 the following note was made: Uterus quite normal. In right broad ligament and to the right of Douglas's pouch there is an exaggerated sense of resistance, as from hardening exudate or organizing blood-clot. Condition otherwise normal.

The patient continued to improve, and was up for a longer and longer period daily, but during this time she could not bear anything tight around her waist, and complained of a slight sense of dragging in the lower part of her abdomen. On April 3d a scanty bloody flow appeared; this ceased in the evening, and began again on the morning of the 4th, to cease again in a short time. On this morning, while sitting upon the chamber to urinate, she felt as if something had suddenly ruptured in her pelvis; this was accompanied by slight pain, and followed by all the symptoms of internal hemorrhage.

Examination an hour later revealed a large tumor occupying the position of the former small mass, pushing the uterus far to the left and bulging the vault of the vagina downward on the right side of the uterus almost to a level with the os; behind the uterus, in Douglas's pouch, there was no bulging or evidence of fluid. The tumor did not reach its full size at once, but occupied several hours in doing so. Ergot and other means of checking hemorrhage were employed.

The diagnosis of hematoma in the right lateral ligament, and probably confined to this, was made.

On the 5th there was a repetition of the sensation of yielding in the pelvis, and examination revealed a slight change in the shape of the mass; there was now a comma-shaped process extending behind the cervix. The temperature during these two days was over 100°. A slight yellowish discharge now appeared, and strong pulsation could be felt in the artery traversing the right wall of the vagina. After this increase in the area of the mass, the tension appeared to be somewhat diminished, and the bulging less prominent. Examination caused no pain. There was no increased swelling of the abdomen, but the rigid condition of the recti muscles precluded any careful diagnosis by palpitation.

On the 7th a slight flow of blood again appeared, and a tendency for the tumor to extend in front of the cervix was noted. The mass began to feel as if it was solidifying. From the 14th to the 18th there was a considerable flow of blood, with the passage again of masses resembling decidua; this was accompanied by some uterine colic. The tumor had now retreated above the level of the cervix; the cervix was retracted and softened, and the os patulous. On May 1st the tumor was noted as one-half of the original size, the uterus was well anteverted, and still pushed somewhat to the left, the cervix was almost natural in consistence, and the os slightly patulous. The flow of blood, which had started again on April 28th, ceased at this time, ergot having been taken since the 19th.

Examination was absolutely painless; artery in vaginal wall still pulsated strongly.

On May 8th she was sitting up again. On the 16th, after a day of irritability, a free flow of blood again appeared.

Note by Dr. Hirst made at this time:

Mass is deeper in pelvis than before, and uterus is again pushed more to the left. The tumor is irregular and of different consistency in its different parts; an indistinct sense of resistance can be felt above pubes, but no mass can be detected in abdomen.

On the 21st, five days later, a mass extending up as far as the umbilicus in the middle line was detected for the first time, although almost daily examinations had been made. The abdominal muscles at this time were much less resistant.

On account of the uncertainty of the pathological condition present, abdominal section was advised, and at once consented to. This was performed on May 23d by Dr. Charles B. Penrose. I will leave the description of the operation to Dr. Penrose, merely giving the pathological conditions found.

Considerable peritoneal adhesions were encountered upon both sides of the abdomen. On the right side, in the position of the tube, a large mass could be felt; the intestines were adherent to this by comparatively firm bands of lymph, and in separating them, the wall of the tumor was ruptured, with the consequent escape of firm clots of blood partly organized. After removing a quantity of these clots, sufficient when aggregated to form a mass as large as a small shaddock, it was possible to enucleate the sac and to remove it together with the right ovary.

Adhesions were also found upon the left side; the ovary was slightly smaller than its fellow on the right; the fimbriated extremity of the tube was firmly bound down to the gland, and springing from the posterior and upper portion was a cyst as large as an English walnut, and filled with clear fluid; these structures on the left side were then removed.

In examining the clots of blood removed from the right side, the fœtus was found after some search; it had evidently been dead for some time.

It measured three and one-half inches; its fingers and toes were well formed and sep-

arated, the nails being plainly seen. The genital organs were visible. These and other points render it certain that the fœtus was at least three months old when it died. The head had collapsed and contained no brains. From the occiput to the dorsal region, and from shoulder to shoulder, the back was broadened out and concave, and presented the same appearance as the inside of the sac at its anterior lower and outer aspect—this will be alluded to further on. The sac was entire, although torn in several places, and was placed, with the fœtus, into alcohol for further examination.

After hardening in alcohol for several months, and after sewing the rents which were made on its removal carefully together, the sac measures three and one-half inches long, two inches wide, and two and one-half inches deep; it occupies the distal extremity of the tube, which suddenly enlarges as it becomes the sac. A ragged opening exists at the anterior lower and outer portion, into which the area upon the back of the fœtus, previously mentioned, accurately fits.

It will thus be seen that the major portion of the fœtus was entirely outside of the sac, and was apparently covered by coagulated blood, which was strictly confined to the locality of the effusion.

The cyst evidently ruptured April 4th, the date of her second attack, the fœtus being thereby killed, and partly extruded into the abdominal cavity, closing the opening in the sac by its body, the inflammatory processes subsequently occurring forming a new sac, so to speak, including the fœtus as part of its walls. The placenta was not found. The blood, as effused, was not free to move in the abdominal cavity, but was confined as just mentioned; there was none in Douglas's pouch.

Remarks.—I have reported this case fully on account of its extreme interest, so many of the facts being known making it an important case in the history of the treatment of extra-uterine pregnancy. Considerable interest has been manifested in the case by members of the medical profession, and it has even been partially reported by those who know only of the case by hearsay.

A point in the etiology of the case seems worthy of note, viz., the possibility of there having been a faulty development of the generative organs. The external genitals being small, the vagina narrow, and the uterine canal needing dilatation, make it one of the possibilities that the tubes may also have been malformed, impeding the free passage of the impregnated ovum to the uterus, and thus predisposing to tubal pregnancy.

It seems almost certain that impregnation took place at the December menstruation, and not at the period following the operation, viz., November 26th. The menstruation late in January being merely a show, a few drops literally, does not diminish the probability of pregnancy existing at the time. The other facts, also, fit in with this theory. Therefore, when the first accident happened on February 19th, the patient was about seven weeks pregnant, the size of the tumor agreeing with this period of gestation.

Electricity was applied for six days, from February 20th to 25th, inclusive, and evidently had no effect whatever in destroying the vitality of the fœtus, or even of retarding its development, as I think I can clearly demonstrate. The fœtus, as removed at the operation, had evidently been dead for some time, and must have been at least three months old, if not older, when it died. The electricity could not, therefore, have had anything to do with its death, as it was applied seven weeks after impregnation.

It might possibly be argued that the patient had conceived immediately after the stretching; but from the clear history given, this is almost, if not quite,

impossible, and although on this theory the fœtus would have been three months old, the size of the tumor, viz., that of a lemon, and clearly defined, would not have been that of that period of gestation. Admitting, for the sake of argument, that the vitality of the fœtus was destroyed by the electrical treatment at the age of three months, the subsequent hematocele was not prevented by it, and this method of treatment, in this case, therefore, proved to be useless.

The date of the second accident, viz., the appearance of the hematocele, April 3d, being just thirteen weeks after the time of the supposed conception, renders it almost certain that this was the cause of the fœtal death.

It cannot be said that the electricity was not properly applied, or kept up for a sufficient length of time, for if the daily application of this agent for six days, galvanic and faradic currents alternating, in quantities as strong as dared be given, and in the hands of one competent to apply it, was not sufficient to destroy the vitality of the fœtus, surely it is an agent that cannot be trusted in such cases. It cannot be argued that any growth or malformation of the parts hindered the electrical application, as the tumor was easily reached by the vaginal electrode ; in other words, this case was as typical a case as the advocates of electricity could wish for to prove the efficacy of their treatment.

It was thought at the time that the diminution in the size of the tumor after this treatment, and the escape of what was apparently liquor amnii, indicated the death of the fœtus and a favorable termination. The rigidity of the abdominal walls in the later history of the case was evidently the cause of our not detecting the large mass in the abdomen until late in May, and the position occupied by the tumor, viz., behind the uterus, prevented us from detecting it *per vaginam*. Witness the note made May 16th. We considered the hematocele was doing little harm ; the temperature was normal, and there was no evidence of suppuration or of further bleeding.

During the whole of the case, we were ready upon a moment's notice, to perform abdominal section, should any more serious symptom arise, and a trained and experienced nurse was, with the exception of twelve days, from March 21st to April 3d, constantly in attendance.

The reasons for selecting the method of treatment employed were as follows : The early period of the pregnancy, and the fact that the case seemed a most typical one on which to use electricity, as this procedure is reported to have succeeded by such good authorities ; the family being informed, as previously stated, of the possibility of failure and of the necessity of having recourse to surgical interference at any time.

The subsequent course, before the occurrence of the hematocele, seemed to justify the method of treatment employed, the hemorrhage being ascribed to the rupture of a vein in the neighborhood of the sac, into the broad ligament, induced by the approaching menstrual period and aggravated by allowing the patient to sit up too soon. The first accident could not have been a serious one, and but little, if any, blood could have escaped, but some local peritonitis was evidently set up at that time.

An interesting question arises in regard to the causation of the condition

of the left ovary and tube. No signs of salpingitis followed the stretching, and there were certainly none of peritonitis. During her illness the patient constantly complained of pain in the left ovarian region, but as this was always accompanied by flatus, and diminished or disappeared on the escape of the latter, it was mainly ascribed to this cause. The question also arises in my mind whether an early operation would have saved the patient the loss of the left ovary, but this is merely a matter of conjecture, and cannot be settled ; it is, therefore, useless to discuss it.

The cyst upon this side possibly antedated the extra-uterine pregnancy.

At the operation it was a disappointment to me to find this disease on the left side, but as it was seen that the patient was dangerously sterile, while the operation rendered her harmlessly so, it was decided to remove it. Although it may be claimed that the case was undergoing spontaneous cure, and ultimately would have recovered without surgical interference, still I regret that the operation was not done at an earlier date, thus saving the patient needless suffering and worry.

I do not profess to be a gynecologist, but this case convinces me of the worse than utter uselessness of using electricity in extra-uterine pregnancy, and the great danger and responsibility of delaying the radical operation for relief; it also emphasizes the difficulty of diagnosing conditions within the abdomen.

The patient, at the time of writing this account, December, 1890, is enjoying excellent health, and looks younger and better than I have ever seen her.

DETAILS OF THE OPERATION IN DR. LEWIS' CASE OF ECTOPIC PREGNANCY.[1]

By Charles B. Penrose, M.D.,

Surgeon to the German Hospital.

As Dr. Lewis has said, laparotomy was performed on May 23d, 1890:

A three-inch incision was made in the median line, terminating immediately above the pubis. The omentum and intestines were found somewhat adherent to the pelvic contents—to the uterus, the right and left broad ligament, and to the left ovary.

To the right of the uterus, and covered by the posterior layer of peritoneum of the right broad ligament, and bulging backward into Douglas's pouch, was a cyst filled with blood-clot in various stages of retrograde change. The cyst was about the size of a large fœtal head, and extended downward to the base of the broad ligament. The cyst wall was very friable and broke during removal. The contained blood-clot escaped into the abdomen, and was removed with the hand. The fœtus was taken out along with a handful of clot, but was not recognized until out of the abdomen.

The cyst was freed from its adhesions and attachments until a suitable pedicle was obtained, when the tube, ovary and cyst were ligated and removed. There was free bleeding during this operation, which was entirely checked as soon as the pedicle was tied.

1 Read before the College of Physicians, January 7th, 1891.

The left appendages were next removed. The left Fallopian tube was closed and somewhat distended and adherent to the ovary. There was a small parovarian cyst about the size of an English walnut. The left ovary was adherent to the sigmoid flexure.

The lower part of the abdomen and pelvis was then freely irrigated with four gallons of hot distilled water. During this irrigation much blood-clot and débris were washed out. The placenta was not found. It was probably lost among the clots washed from the abdomen. The abdomen was drained with a glass tube. Recovery was uninterrupted. The drainage-tube was removed on the second day. The temperature remained practically normal during convalescence, and the patient was able to sit up twenty-four days after the operation.

There are two operative points to which I take the liberty of asking your attention. One is the ease with which the hemorrhage is controlled in these cases by ligating the broad ligament. If everything is removed quickly, and no time wasted in attempting to stop hemorrhage until a pedicle is obtained, all bleeding can be controlled by the one ligature. Several cases have been lost by neglect of this rule.

The second point is the value of free irrigation of the abdomen, which was well illustrated by this case. It would have been impossible in any other way to remove completely all the blood-clot and débris.

This case presents many points of interest which have been referred to by Dr. Lewis. In the first place, with regard to the cause of the ectopic pregnancy, I do not think that the faulty development of the generative organs had anything to do with this, for this faulty development did not extend above the cervix. The vagina was narrow, and the uterine canal needed dilatation; but the uterus itself was normal in size, shape and position, and tubes and ovaries were normally developed.

I think that the disease which brought about the condition of the left tube and ovary, shown by the specimen, was also the predisposing cause of the ectopic pregnancy. The salpingitis, or inflammation, which caused agglutination of the fimbriæ of the tube to the surface of the ovary on the left side, in all probability, destroyed the cilia of the epithelium of the right tube, or so interfered with their motion that the passage of the ovum along the tube was retarded, and no impediment was offered to the ingress of the spermatozoa.

It is possible that the narrow cervix, by obstructing the menstrual flow, or perhaps the first dilatation, may have been the cause of this salpingitis. The fact that there had been some inflammatory trouble before the patient came under Dr. Lewis' care, was shown by the discharge from, and the erosion around, the cervix.

Another point of interest is the diagnosis of ectopic pregnancy, which was made before rupture of the tube; for I do not think that the first attack of pain which this woman had when in court on February 19th—over six weeks after conception—was caused by rupture of the tube.

On this occasion there were no signs of internal hemorrhage, and the shape and size and position of the tumor, felt a very few hours after this attack, were not characteristic of extra-peritoneal hæmatocele, or of effusion of blood into the broad ligament. Dr. Lewis states explicitly that a tumor could be felt to the right of the uterus, of the shape and direction of the tube, and apparently as

large as a lemon. I think that this attack was one to which all women in the early weeks of ectopic pregnancy are liable, and was caused by partial separation of the placenta from the walls of the tube, with resulting slight hemorrhage into, and distention of, the tube, without sufficient tension for rupture; and I think that the pelvic examination proves that this was the case. The real tubal rupture took place on the 3d of April, twelve weeks after conception. This attack was accompanied with all the symptoms of internal hemorrhage; and pelvic examination showed a large tumor occupying the position of the former small mass, pushing the uterus to the left and bulging the vault of the vagina downward on the right to the level of the os, and this tumor did not reach its full size at once, but occupied several hours in doing so. These were the characteristic signs of extra-peritoneal hematocele, resulting from rupture of the tube into the broad ligament. It was this accident which caused the death of the fœtus. If this view is true, this case becomes of especial interest, because the diagnosis was made before primary rupture of the tube. The history of reported cases of ectopic gestation shows that such a diagnosis is very rarely possible, because the symptoms of ectopic pregnancy, if present at all, are so few and so indefinite during the early weeks that the woman never seeks medical advice until rupture has taken place.

The case under discussion, however, was unusually easy to diagnose. The woman followed the general rule of a previous long period of sterility. From the beginning she presented not only all the usual signs of pregnancy, cessation of menses, nausea, mammary changes, etc., but, even at a very early period, certain signs which pointed toward right tubal pregnancy, as uneasiness, pain and tenderness in the right ovarian region—symptoms which were present only five weeks after conception took place. Then, finally, the increased pain necessitated a pelvic examination, which revealed her condition when only seven weeks pregnant. It is very unfortunate that we do not always have such a typical case for diagnosis.

The next point is the early treatment.

The woman was seven weeks gone with a fœtus in the right Fallopian tube when her condition was diagnosed. The history of these cases shows that, some time before the fourteenth week, the tube ruptures, always with one of two results. It may rupture into the peritoneum, in which case the woman always dies, unless relieved by immediate laparotomy; or it may rupture between the folds of the broad ligament. Such a rupture is not immediately fatal, but may become so by secondary rupture into the peritoneum, or by the death and decomposition of the fœtus and suppuration of the cyst contents, with the formation of a pelvic abscess, its burrowing and its sinuses and sequelæ, which are so familiar to all of us.

The two plans of treatment open were to remove the tube and its contents, and avoid these dangers, by laparotomy; or to try to kill the fœtus by electricity, stop further distention of the tube, and trust to nature for absorption. Aside from all other arguments which can be made and have been made against the use of electricity in the treatment of ectopic pregnancy, I think that the fact that electricity failed to kill the fœtus in this case, with everything in its favor, and

manipulated by an expert, shows that it is worse than waste of time to trifle with this agent in such cases.

That electricity did fail to kill the fœtus is proved by the fact that it continued to grow for over six weeks after the use of electricity, and was finally killed by rupture of the tube when twelve weeks old.

With regard to the disease of the left tube and ovary, as I have already said, I think that it existed before conception; and the inflammatory trouble which caused it, also, caused the ectopic pregnancy. The pain in the left ovarian region, of which she complained during her illness, and which was generally accompanied by flatus and relieved by its escape, can easily be accounted for by the adhesion existing between the ovary and sigmoid flexure.

There were two occasions in the history of this case when the advisability of laparotomy was considered. One was after the first attack of pain when the presence of ectopic pregnancy was discovered. I think, and Dr. Lewis agrees with me, that laparotomy should have been immediately performed, to save the patient from all the dangers of her condition—the chief of which was intra-peritoneal rupture. With such a danger imminent, the life of the fœtus should be of no consideration. The operation itself would have been simple, with a mortality of under five per cent., and the woman would have received only benefit by the removal of a dangerous and useless appendage.

The second occasion was after extra-peritoneal rupture, or rupture into the broad ligament, had taken place. After this the risk of secondary intra-peritoneal rupture was not so great. This danger, however, was constantly present, accompanied by all the dangers attending the formation of a pelvic abscess.

Laparotomy was indicated here as it would be in any case of pelvic tumor, and especially so, as Dr. Lewis has said, since the pathological condition was uncertain, and disease of the tube and ovary was also diagnosed upon the left side.

THE MODERN AIDS TO DIGESTION.[1]

By Edwin H. Bidwell, Ph.G., M.D.,

Vineland, N. J.

There is no lack of literature upon pepsin and the other digestive agents. Our offices are almost flooded at times with learned treatises on digestion, tables of comparative testings, etc., issued by accommodating manufacturers, who appear to vie with the makers of infant foods in their anxiety to furnish us with the very latest and most reliable information—as they interpret it. But, as usual, there are two sides to the shield, and, which is to be expected, perhaps,

[1] Read before the Cumberland County Medical Society, at Bridgeton, N. J., April 14, 1891.

our friends the manufacturers present only their side—very bright and glittering; decidedly golden, indeed—from their particular point of view; while for us and our patients it is left to make the discovery that too often our side is disappointingly dull and leaden. Still we must admit that these enterprising manufacturers have done us a great service; not so great, perhaps, as they would have us believe, but nevertheless a useful and considerable one. To introduce the question of just how great that service has been, of how far and how the modern aids to digestion are valuable, clinically, is the object of my essay; and to discuss this subject so as to result in anything of value to us as practical physicians, we must approach it not entirely from the standpoint of the theoretician, much less from that of those exploiting a particular product. Scientific physiologists have had much to say upon the subject of digestion, but we as practitioners can hardly depend solely upon their conclusions any more than upon those of the manufacturers. It remains for them to decide among themselves many points, important ones, too, in the still somewhat obscure process of digestion before we can use any of the known, or of the yet to be introduced, digestive agents in a really scientific manner. Meanwhile, however, it may be worth while to look over the ground already occupied, to take account of stock of what is known, and arrange together in as convenient form as may be such of the established facts and generally accepted theories as appear to be practically useful in the treatment of diseased conditions as we find them.

The first of the digestive ferments, classing them in the order of natural digestion, is *diastase*. This is supposed to correspond to, or to represent, the ptyalin of the saliva, the office of which, as you know, is the conversion of starch into sugar. Neither ptyalin nor commercial diastase has any action upon fats or proteids. Diastase is not, so far as I know, very largely used, though the commercial article, at least all which I have examined, is quite active. More important, because more used, are the malt extracts, of which there are a great variety offered us. The question of their nutritive value I cannot enter into now. Clinically, as we all know, they are frequently useful. As to their digestive value, it is very little, if they have any. No power but that of converting starch into grape-sugar is claimed for them, and I doubt whether any malt extract, however rich in diastase it may be, has ever acted upon, or will ever act upon in the human body, one single grain of starch.

You can easily judge of this for yourself. Make a little starch mucilage and put a portion of it into each of two bottles. Dilute it in one of the bottles with water, in the other with a two-tenths per cent. solution of hydrochloric acid, representing about the normal acidity of the human gastric juice. Then to each add some good malt extract, half as much as you have taken of the starch mucilage, or a little more, and set the two bottles, after a good shaking, side by side, in a water bath at 100°F. In ten minutes, or less, according to the activity of the malt used, you will find, by testing with iodine in the ordinary way, no starch in the solution made up with water. The starch will all have been converted by the diastase of the malt into grape-sugar, or partly into dextrin and partly into sugar.

But you may leave the bottle containing the acid solution in the bath an

hour, six hours, ten hours, keeping it constantly at the temperature of the stomach, or higher or lower as you like, and the iodine will still show the presence of starch. Not a particle of starch will be transformed, nor a particle of sugar produced in such a solution. Indeed, the result will be the same if your hydrochloric acid solution is only one-half as strong—one-tenth per cent. or even less. But this is not important—the fact remains that diastase is wholly inert in a solution of the acidity of the human gastric juice during digestion; and I see no escape from the conclusion that it is inert in the human stomach. More than this—you can continue the experiment a little further, and answer a question that has already, perhaps, come into your mind. When you are satisfied that no digestion is going on in the acid bottle, neutralize the contents carefully with sodium bicarbonate. It does not matter if you get in a little bit too much, for diastase is active in an alkaline medium, but a large excess is objectionable, and interferes with the iodine test.

Now you have the malt with the starch in a neutral or slightly alkaline mixture, and it ought to convert the starch into sugar just as it did in the other bottle under the same conditions. But put it into the bath and leave it there as long as you like. You will still get the iodine blue just the same at the end of an hour or six hours as when you first put it in. What has happened? Why simply that the hydrochloric acid, the artificial gastric juice, destroyed the ferment, the diastase, just as too great heat, strong alcohol, and many other agents destroy it. Can we hope, then, that diastase, when we give it to our patients, though we are willing to allow it to lie inactive in the acid stomach, may do its appointed work in the alkaline intestine when it reaches there? Our little experiment has shown that it never gets into the intestine as a ferment. Hence I contend that, as a digestive, diastase, either as such, or in any extract or preparation of malt, is useless. You will observe that this is quite different from denying that the malt extracts are valuable as tonics or nutrients. But I hold that their value is quite apart from their diastatic activity—though perhaps the latter, which is easily determined in the laboratory, may serve as a comparative test of their virtues.

I must admit that some authorities do not go quite so far as I have done, though they all show a strong tendency that way. Chittenden, in a very careful and complete survey of the subject, says, conservatively: "I think we can safely conclude that the action of the diastatic ferments can, at the best, continue only for a short time in the stomach, and that cessation of amylolytic action is quickly followed by destruction of the ferment through the action of the free and combined hydrochloric acid. Further, it is obvious that the administration of the diastatic ferments, however active, by mouth, with the intention of supplementing the pancreatic digestion of starch in the small intestine, can be of little value, since the ferment must inevitably be destroyed before reaching the seat of action." Of little value, indeed! How can it have any value, if it is "inevitably destroyed" before it can act?

The most important, or at least the most popular, of the digestive ferments is *pepsin*. Many practical physicians and some authors have condemned pepsin as useless in the treatment of disease. But on the other hand there is a much

larger number, and an apparently increasing one, who do use it and have faith in it; and from the clinical evidence in its favor, it seems to me as unreasonable to condemn pepsin altogether, as it is to consider it a panacea and use it indiscriminately in all the disorders of digestion and the whole range of affections of the stomach.

There are some well-known physiological facts which you will pardon my quoting on account of their great practical bearing upon the use of pepsin in medicine. First, pepsin is active only in the presence of an acid, and it seems to have a special affinity for hydrochloric acid, which is present in normal human gastric juice in about the proportion of two-tenths per cent. It has, doubtless, some slight digestive power in neutral fluids, but it is very slight, while in alkaline solutions it is inert, and any considerable degree of alkalinity permanently destroys its power.

Besides the dependence of pepsin upon hydrochloric acid to develop its activity, it has I think, been abundantly proved that when, in disease, the gastric juice is deficient in pepsin, it is also deficient in hydrochloric acid. Indeed, it is well known clinically that the acid alone, without pepsin, is valuable in many cases of insufficient or delayed digestion. The point to remember, however, is that pepsin, given alone, may at times be quite inefficient, not from any lack of power in itself, but simply from deficiency of acid; this trouble is easily remedied by the administration at the same time of small doses of hydrochloric acid. This is the preferable acid, though the other mineral acids, especially phosphoric, are useful in a less degree.

Another fact which, though well understood by every educated practitioner, is, I think, too often forgotten in prescribing pepsin, is that it has no power in the digestion of any other than nitrogenous foods. Upon fats it has no action at all, and upon starchy foods its office is only to digest or dissolve off the albuminous envelope of such of the starch-granules as are yet unbroken when the food reaches the stomach. That process, the rupturing of the starch-granules, should be performed in the cooking, and not left for the stomach of the invalid or the dyspeptic to accomplish. The digestion of the fats, as of the carbohydrates which have escaped the action of the saliva, is, in the animal economy, the function of the pancreatic juice; and when the fault lies there, it cannot be remedied by the administration of pepsin. And when we prescribe a dietary, from which we have carefully excluded all nitrogenous matter, it is quite unnecessary to add that the patient must take pepsin after his meals—that is, if we expect him to follow our instructions in his bill-of-fare.

In estimating clinically the value of pepsin, it is, of course, very important to be able to separate the improved digestion due to the pepsin from that due to the other therapeutic agents with which it may be associated. We give pepsin with ipecac, for instance, and get good results; but how do we know that the pepsin is entitled to any credit? Ipecac has an undoubted power of stimulating the secretory glands; and without control experiments or experience, we would not, in the case cited, be justified in attributing any influence whatever to the pepsin used. When used in complicated "shot-gun" prescriptions, the matter of determining the effect of pepsin becomes an impossibility.

Pepsin has, in fact, no business in "shot-gun" mixtures, for its activity is impaired or entirely destroyed by a great variety of substances. Solution in plain distilled water even impairs it, and the proteolytic power of such solutions is, by the growth of bacteria, for which they are a good culture-fluid, rapidly destroyed. Alcohol destroys the pepsin-ferment, so that, as is generally well known, wines and elixirs of pepsin soon become inert, as must also prescriptions containing any alcoholic preparation in combination with pepsin—inert, that is, as far as they have any effect from the pepsin they contain, though they may be efficient by reason of other ingredients, while the pepsin that was present, though now useless, will quite likely get the credit for the resulting improvement.

Upon prescribing it in combination with sodium bicarbonate, or other alkali, I need not comment, for I trust no member of our profession could be guilty of writing such a prescription.

There are many interesting facts in relation to pepsin, and many interesting subjects for discussion concerning it which I must forego, and content myself with the simple statement of some of the conclusions which I have reached from my own studies and experience; and you will pardon my stating them somewhat dogmatically, because of my desire for brevity.

Saccharated pepsin is a thing of the past, except possibly in infants. The *liquor pepsin*—that is, a solution of a good scale or so-called pure pepsin, with glycerine and hydrochloric acid in water—is the best form to use; and it should be used alone, or combined very rarely with other medicines. The dose I do not consider a matter of very great importance. Theoretically, being a ferment and its action catalytic, it should not make much difference how small the quantity employed; and, practically, we find that if the pepsin be good, a small or moderate dose will do a considerable amount of work, while if it be not good, an immense dose even will fail to accomplish anything.

Next in order, in commercial importance as well as in physiological relations, comes the *pancreatic juice*, having the power of digesting all the food elements, fats, carbohydrates and proteids. It would seem that the use of a successful substitute for it ought to produce better results in indigestion than either diastase or pepsin, with their more limited activity. The pancreatins and pancreatic extracts of the market have not been brought to as great perfection as the pepsins; are not as good products; but some of them at least are quite active, and appear to represent pretty well the natural pancreatic juice.

I think the liquid preparations offered more efficient, in corresponding quantity, than those in the form of powder. But while they are easily shown to be all that is claimed for them, in the laboratory, I think it extremely doubtful whether they are of any use in assisting the process of digestion in the body. I am scarcely prepared to say positively that they are useless; but it is hard to see, when one comes to examine the question closely, how they can be otherwise. It will take a great deal more clinical evidence in their favor than I have yet seen to overbalance in my mind the chemical and physiological testimony against them. Briefly, *pancreatin* (using that term as a convenient one for a preparation representing the pancreatic juice) is inoperative in an acid solution,

and under the conditions present in gastric digestion, even when the contents of the stomach are much below their normal acidity, it is wholly inert. Moreover, it is, as might be expected, being a proteid compound, itself digested by gastric juice, so that it must necessarily be destroyed in its passage through the stomach, and the opportunity for its action, in the alkaline intestine, of no avail, because it never reaches there. To overcome these objections, which cannot be gainsaid, we are recommended to give it some time after meals after gastric digestion is finished. This would be very well if, at the time of its administration, the stomach were empty or alkaline, neither of which it probably ever is in health and seldom in disease. If the pancreatin be given with an alkali sufficient, presumably, to neutralize the acidity of the stomach-contents, it is still doubtful whether it can pass into the intestine in time to do any good, for gastric digestion and intestinal digestion are almost simultaneous processes, at least in health. I am well aware that good results have been attained with this method of administration, but equally good ones are secured oftentimes by the alkali without the pancreatin.

Though I have myself used pancreatin in this way in quite a number of cases, I have never been quite sure that it had helped at all. My patients were sometimes relieved, but the soda alone might have relieved them just as well. Indeed, the use of sodium bicarbonate in some forms of indigestion antedates by many years the introduction of pancreatin. On the whole, I am strongly inclined to believe that pancreatin given by the mouth is useless. Certainly, to test it satisfactorily, it should be given alone, or with a simple alkali, not in combination with pepsin or stomachics. Many of the elixirs, tablets, pills, etc., offered us by the manufacturers, it seems to me, would be quite as efficient with half their constituents omitted. Take the combination of pepsin and pancreatin together—the most common, as it is the most absurd, from a chemical and physiological point of view—as an instance. Of course, the makers claim that they do produce good results in practice, and that the combination has clinical advantages in spite of the rational evidence against it. When clinical testimony enough in favor of this or any other similar combination shall be presented, I shall be ready to admit that the chemist and physiologist have so far been mistaken. The evidence is not all in yet; but as I see it, it is not growing any more favorable to the manufacturers' side of the question.

Pancreatin itself will, I think, do us its greatest service in the preparation of pre-digested foods, the clinical importance of which is firmly established. Even to run over them hastily would take up too much of your time, and I can only stop to give my own opinion, which has been somewhat modified, by experience, from that originally entertained. The use of pre-digested foods seems to me very often a valuable aid in the treatment of infants; only occasionally so in old age, and in diseases of adults, except in surgical cases, when they are extremely useful at times for short periods, as after severe accidents and operations. My experience with them in phthisis and kindred diseases may, quite probably, not be sustained by that of others; but I can only say that, so far, I have been always disappointed in them. As to the ready-made so-called liquid foods of various kinds, I do not know that I have ever had a

decisively good result from any of them in any single case, and I have tried them quite extensively and watched them carefully. They are, or rapidly become on continued use, so distasteful to most patients (and as it happens they would be useful, if at all, in just those cases in which the stomach has to be the most petted). that nowadays I am very slow to prescribe them.

The use of pre-digested or partially digested foods, prepared extemporaneously in the kitchen, is, I think, of better promise; and when the services of an intelligent and careful person can be secured to prepare them, they can be made quite palatable as well as nutritious. Unfortunately the opportunity to use them does not often occur, because of the trouble in preparing them properly, a matter easy enough to the skilled chemist, but of real difficulty to the ordinary nurse or cook.

There is, perhaps, an objection to the too free or long-continued use of pre-digested foods or of any artificial aid to digestion, in the possible danger of producing a permanent enfeeblement of the stomach. Other organs lose their power when no work is given them to do, and it seems probable that the stomach may. I think that, practically, this can seldom happen; but I can imagine that it might easily become frequent, should the use of pre-digested foods and really efficient digestants come to be a routine practice with us.

However, be this a real danger or not, it should not affect the use of what aids we have, in properly selected cases. If I have succeeded in presenting any part of this subject in any new light, and stimulating thereby, perhaps, a more careful and discriminate use of these agents with a closer observation of their effects, this paper will have served its only purpose.

SOME EXPERIMENTS ON ACETONURIA IN DIABETES MELLITUS AND ON THE PHYSIOLOGICAL ACTION OF ACETONE IN THE ANIMAL ORGANISM.

By G. Metzler, M.D.,

Philadelphia.

The peculiar odor of the urine in some cases of diabetes mellitus suggested the idea to Petters,[1] in 1857, of searching for the substance to which that odor was due. Dr. Lerch, of the Zoo Chemical Institute, of Vienna, intimated to Petters that the substance in question was probably acetone.

A diabetic patient (female) admitted to the clinic of v. Jaksch, Sr., in Vienna, in a state of complete exhaustion, presented a multitude of symptoms,

[1] Petters, Untersuchungen über die Honigharnruhr; Prager Vierteljahrsschrift, 1857, XIV., 3 Bd. p. 81.

the most prominent of which were a feeling of constriction around the chest, pain in the epigastrium, dyspnœa and a peculiar chloroform-like odor of the exhalations. The patient's condition soon developed into a state of complete narcosis. The next morning the chloroform-like odor from her exhalations could be recognized at any part of the ward in which the patient was stationed. Having been in this narcotic condition for thirty hours, the patient died. *Post-mortem* examination showed a catarrhal condition of the stomach and intestines.

A distillate prepared from the urine of the patient possessed many properties peculiar to acetone. Petters found the same characteristics in other diseases, as measles, and scarlet fever.

He concluded that the coma of the patient was the result of an intoxication by acetone, and that the acetone was produced in the intestinal tract from the breaking up of glucose.

Kaulich,[1] who followed Petters as assistant at the same clinic, subjected 700 pounds of diabetic urine to fractional distillation, and succeeded in separating a substance which presented all the chemical properties of acetone. His conclusions coincided with those of Petters.

These experiments of Petters and Kaulich mark the beginning of the literature of acetonuria.

In 1861 Betz[2] published a clinical description of acetonuria. He thought that acetone was produced in the cavity of the mouth.

Cantani[3] described four types of acetonæmia according to the various symptoms presented.

Kussmaul[4] doubted the theory of acetonæmia, as the presence of acetone in the blood had not been satisfactorily demonstrated. But one of his conclusions reads thus: "It (the dyspnœa) must be due to intoxication connected with chemical disturbances in diabetes; nothing certain, however, can be given as to the nature of the toxic agent. Kaulich's acetonæmia does not explain it." In Kussmaul's article on acetonæmia, it is stated that "it is plausible that the continuous circulation of a toxic substance in the blood may produce a state of the system like delirium tremens in an acute form."

That acetone appears in the urine of some cases of diabetes mellitus and many other, especially febrile diseases is at present well established through the researches of Markownikoff,[5] v. Jaksch,[6] le Nobel,[7] Pentzoldt,[8] Legal,[9] and other observers.

Markownikoff[10] and v. Jaksch[11] succeeded in separating comparatively pure acetone.

[1] Kaulich, Ueber Acetonbildung im thierischen Organismus; Prager Vierteljahrsschrift, 1860, XIV., 3 Bd., p. 581.

[2] Betz, Memorabl., VI. (Auszug in Schmidt's Jahrbücher). 1861. Bd. 112, p. 147.

[3] Cantani, Ueber Acetonæmia (II. Morgagni VI., p. 365, 650, 1864); Schmidt's Jahrbücher, 1864, Bd. 127, p.167.

[4] Zur Lehre vom Diab. mell., Deutsches Arch. f. kl. Med., 1874. Bd. XIV., p. 11.

[5] Markownikoff, Das Acetone im Harn der Diabetiker; Annalen der Chemie und Pharm. 1876, Bd. 182, p. 362.

[6] v. Jaksch, Ueber Acetonurie und Diaceturie, Berl., 1885.

[7] le Nobel, Archiv für exp. Path. und. Pharmakologie, Bd. XVIII., p. 18.

[8] Pentzoldt, Beiträge zur Lehre von der Acetonurie und von verwandten Erscheinungen. Deutsches Archiv für kl. Med., 1884. Bd. XXXIV., p. 127.

[9] Legal, Ueber eine neue Acetonreaction und deren Verwendung zur Harnunters. Bresl., ærztl. Zeitschr., 1883, No. 3 und 4.

[10] l. c. [11] l. c.

The latter observer has introduced a term, "physiological acetonuria," because he found minute portions of acetone in the distillate from enormous quantities of normal human and animal urine. It seems, however, that this term is ill-chosen and inappropriate, because between physiological and pathological conditions we find only differences of quantity, not of quality.

In 1865 Gerhardt found that the urine in some cases of diabetes mellitus assumes a red color on the addition of ferric chloride.. He attributed it to the presence of ethyl diacetic acid. Later observations, however, have conclusively shown that the substance is diacetic acid ; and Minkowsky has found that beta-oxybutyric acid, which sometimes occurs in the urine, produces the ferric chloride reaction.

As to the physiological action of acetone in the organism, we record the experiments of Kruska,[1] v. Frerichs,[2] Kussmaul,[3] Tappeiner,[4] Buhl,[5] Albertoni,[6] and v. Jaksch.[7]

Although the results and the conclusions drawn from their experiments are very variable, the weight of evidence seems at present to be in favor of the conclusions of v. Jaksch,[8] *i. e.*, that acetone may produce profound symptoms of poisoning, and that the experimental results do not admit of rejecting the possibility of an acetone intoxication.

I. Chemical.

The chemical work detailed for detection of acetone in diabetic urine was performed in the chemical laboratory of the Medical Department of the University of Pennsylvania. I take pleasure in expressing my gratitude to Professor Marshall for the permission to use his apparatus, and for the kind advice he has given me.

For the recognition of acetone, the urine was distilled according to the method of v. Jaksch, which consists in adding 3 c.c. of hydrochloric acid to each 100 c.c. of urine to prevent ammonia from going over with the distillate.

The presence of acetone was ascertained by the following tests :

1. *Legal's Test.*—To a few cubic centimeters of urine or distillate, a few drops of a freshly prepared solution of sodium nitro-prusside are added, followed by potassium hydroxide, when a red color appears.[9]

This red color, after a little time, changes into a straw-yellow color. In the case of kreatinine the change takes place more rapidly than with acetone. On the addition of a few drops of concentrated acetic acid a dark red coloration appears at the point of contact of the two liquids.[10] This, however, only occurs when acetone is present in considerable quantity ; in the presence of smaller quantities no change at all is observed. On standing, a dark blue pre-

[1] Kruska, Ueber Acetonæmia, Inaug. Dis. Greifswald, 1873.
[2] v. Frerichs, Ueber den plötzlichen Tod und das Coma bei Diabetes, Zeitschr. f. kl. Med., Bd. VI., p. 1.
[3] l. c.
[4] Tappeiner, Deutsch. Archiv f. kl. Med., Bd. XXXIV.
[5] Buhl, cited by v. Jaksch.
[6] Albertoni, Archiv f. exp. Path. und. Pharm., Bd. XVIII.
[7] l. c.
[8] l. c.
[9] The red color in the undistilled urine may be due to kreatinine. As this latter substance is not volatile, it does not go over into the distillate, and it may here be excluded.
[10] Sometimes, on addition of sodium nitro-prusside, a yellowish-red color, and after the addition of acetic acid a pink instead of a dark red color appears ; this reaction is produced by para-cresol, a normal constituent of the urine.

cipitate falls. This precipitate may be obtained rapidly if, after the addition of acetic acid, the solution is heated. That kreatinine takes no part in the production of this coloration or the precipitate is evident from the fact that it occurs in the distillate and also in solutions prepared from pure acetone.

2. *Lieben's Test.*—This test depends on the formation and precipitation of iodoform when potassium hydroxide and a solution of iodine in iodide of potassium is added to a solution containing acetone.

The following test solution was found to give the most satisfactory results: Potassium iodide, 16 grammes; iodine, 8 grammes; water, 93 grammes. This reagent will detect even the smallest portions of acetone. Exceptionally, there may occur other substances in the urine which give an iodoform reaction. One of these is alcohol, but with alcohol the reaction takes place only on standing, while with acetone it takes place immediately.

3. *Reynolds' Test.*—This depends on the power of acetone to dissolve mercuric oxide. It is performed as follows: From a solution of mercuric nitrate in a test tube, mercuric oxide is precipitated with an alcoholic solution of potassium hydroxide. The solution supposed to contain acetone is added and the mixture shaken. The liquid is filtered, taking care that the liquid passes through clear. To the filtrate ammonium sulphide is now carefully added. If acetone is present a dark ring of mercuric sulphide will appear at the point of contact of the two liquids. This is valuable as a confirmatory test, because it does not respond to many substances which may give reactions with sodium nitro-prusside or iodine.

4. *Le Nobel's Test.*—This is a modification of Legal's test only in that ammonium hydroxide is substituted for potassium hydroxide. On standing a pinkish coloration occurs if acetone is present.

5. *Gerhardt's Test for Diacetic Acid.*—This depends on a red coloration occurring in the urine when ferric chloride is added. If a precipitate of phosphates appears, it must be removed by filtration. To the filtrate a few drops of ferric chloride are added, and if diacetic acid is present a claret-red color appears. To determine positively whether this is due to diacetic acid, a portion should be boiled and another portion acidified with sulphuric acid, cooled and shaken with ether. If the ferric chloride reaction does not occur in the boiled urine, or only faintly, and if the color in the layer of ether which collects on the top of the urine fades away within twenty-four or forty-eight hours, diacetic acid is present (v. Jaksch). If the color in the layer of ether does not fade away, it is due to beta-oxybutyric acid (Minkowsky).

The urea was determined by the hypobromite method, using Marshall's apparatus.

Cases.

In the first series of cases an extensive examination could not be made because of an insufficient quantity of urine, and in which only one examination of the urine was made. In the second series, extensive examinations were made.

a.—CASES IN WHICH EXTENSIVE EXAMINATIONS FOR ACETONE WERE NOT MADE.

1. Urine from a Case of Dr. E. H. Trowbridge, Worcester, Mass.

		Acetone Tests.			
Sp. gr.	Sugar in per cent.	Legal.	Lieben.	Fer. Chl.	Remarks.
1031	6.00	Negative.	Very faint.	Negative.	Dr. Trowbridge writes that the patient weighs 230 pounds; that there is drowsiness, and that the breath has a peculiar odor.

2. Urine Obtained from a case of Dr. Daland, Philadelphia.

Acetone Tests.			
Legal.	Lieben.	Reynolds.	Remarks.
Strong.	Strong.	Strong.	Patient died of gangrene.

b. CASES IN WHICH A CONTINUOUS AND EXTENSIVE EXAMINATION WAS MADE.

1. BELLODINO COLLINS, ITALIAN, PATIENT IN THE PENNSYLVANIA HOSPITAL.

Date.	Food and Medication.	Quantity in c.c.	Sp. Gr.	Sugar in per cent.	Urea in per cent.	Urea in grammes per day.	Acetone Tests.				Ferric Chloride.	Remarks.
							Lieben.	Legal.	Reynolds.	Le Nobel.		
May 1	Ergotin, 63 ℥	2310	1038	6 92	1.407	32.501	strong	faint	strong	moderate	negative	The 63 ℥ in the second column represent the quantity of food (total of solids and liquids ingested). As to the amount of nitrogenous and non-nitrogenous food no estimation was made in the hospital.
" 2	" " "	2330	1039	6.45	1.295	30.173	strong	moderate	strong	moderate	negative	
" 3	" " "	4800	1040	6.23	1.494	71.712	strong	faint	strong	faint	negative	
" 4	" 67 "	2310	1041	6.78	1.499	34.626	strong	faint	strong	faint	negative	
" 5	" 97 "	3000	1044	6.49	1.552	46.560	strong	moderate	strong	faint	negative	
" 6	" 85 "	2530	1041	7.14	1.615	40.859	strong	moderate	strong	faint	negative	
" 7	" 80 "	2100	1043	4.49	1.881	39.501	strong	moderate	strong	moderate	negative	
" 8	" 95 "	2320	1040	5.07	1.242	28.814	strong	faint	moderate	faint	negative	
" 9	" 80 "	2240	1043	5.00	1.667	37.340	strong	faint	moderate	faint	negative	
" 11	" 90 "	1500	1044	4.69	1.925	28.875	less "	faint	moderate	faint	negative	
" 12	" 80 "	3240	1034	5.14	1.175	38.070	strong	very faint	moderate	faint	negative	
" 16	" 55 "	1720	1040	4.35	1.481	25.473	strong	moderate	strong	moderate	negative	Patient dull and stupid.
" 18	" 45 "	1400	1038	7.01	1.492	20.888	strong	faint	moderate	faint	negative	Patient feels little better.
" 19	" 80 "	1500	1035	7.19	1.185	17.775	strong	faint	moderate	faint	negative	Patient bright and intelligent.
" 20	" 90 " Ergotin discontinued.	1600	1039	6.99	1.551	24.816	moderate	faint	faint	faint	negative	
" 21	Ergotin, 75 ℥	800	1039	4.40	2.718	21.744	moderate	negative	negative	faint	negative	Patient bright and intelligent.
" 22	" 80 "	1600	1031	3.64	2.449	39.184	moderate	negative	moderate	faint	negative	
" 26	" 85 "	1620	1034	4.57	1.452	23.522	moderate	faint	faint	faint	negative	
" 27	" 90 "	1600	1033	4.88	1.776	28.416	moderate	faint	moderate	faint	negative	
" 29	" 95 " Pulvis opii & strychnia.	2000	1034	5.75	1.646	32.920	moderate	faint	moderate	faint	negative	
Jun. 2	" 85 ℥	500	1040	6.39	1.518	7.590	strong	faint	strong	faint	negative	Patient was very much depressed.
" 3	" 80 "	720	1041	5.26	1.815	13.068	strong	faint	strong	faint	negative	Patient not so much depressed.
" 4	" 70 "	1200	1037	6.39	1.655	19.860	strong	faint	strong	faint	negative	
" 8	" 95 "	1400	1037	6.05	2.197	30.758	faint	negative	faint	faint	negative	
" 11	" 90 "	1000	1040	3.24	2.556	25.560	moderate	moderate	moderate	faint	negative	Patient much better, sitting up in bed.

2. PATIENT IN THE PHILADELPHIA HOSPITAL.

Date.	Quantity in c.c.	Sp. Gr.	Sugar in per cent.	Urea in per cent.	Urea in grammes per day.	Acetone Tests.				Ferric Chloride.	Remarks.
						Lieben.	Legal.	Reynolds.	Le Nobel.		
June 16	24.000	1028	6.06	0.243	58.320	moderate	negative	moderate	negative	strong.	No definite information could be obtained as to food and medication. The quantity in the second column is according to the statement of the nurse. The urine boiled always at about 95° C.
" 17	"	1028	6.29	0.243	58.320	"	"	"	"	"	
" 18	"	1028	6.79	0.243	58.320	"	"	"	"	"	
" 20	"	1029	6.27	0.342	82.080	"	"	"	"	"	
" 23	"	1029	6.04	0.342	82.080	"	"	"	"	"	
" 24	"	1028	6.42	0.342	82.080	"	"	"	"	"	
" 27	'	1033	7.26	0.342	82.080	"	"	"	"	"	

(TO BE CONCLUDED)

ON THE GASTRIC DISORDERS OF PULMONARY TUBERCULOSIS.

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A Clinical Lecture, Delivered at the Philadelphia Hospital.

In the phantom chase after specifics for the cure of pulmonary tuberculosis, thus far in the history of the medical art, only one or at least two substantial realities have become the common property of the medical profession. It matters not what methods have been used, or what roads have been taken, the same goal is reached. The necessity of the climatic treatment for properly selected cases of phthisis is accepted without further argument. So, too, the conviction is now firmly established in the minds of all clear thinking practitioners that on the nutrition of the patient depends largely the success which we meet in combating the disease. Just so far as we are able to keep this up, just so far as we can keep up the weight and good strength, just so far as we meet wear and waste with nutriment, just so far do we control this disease. While the climatic treatment is essential in many cases, proper feeding is necessary in all cases. Indeed, without the latter, the former avails little. Of course there are cases and cases of tuberculosis, and far too many, in spite of the use of our best measures and resources, prove fatal. The occurrence of such an unfortunate result depends upon the number of infective micro-organisms, invading the system, upon the particular organ or tissue invaded or upon the degree of resistance of the tissues to the irritation of the specific bacillus. Cases, however, the fatal termination of which is a foregone conclusion, demand careful and patient attention to nutrition and to those processes which contribute to nutrition, the function of digestion, in order to allay distressing symptoms, and by this means contribute to the comfort of the patient and soothe the weary pathway to the grave.

By necessity, therefore, it behooves the practitioner to guard with jealous care the functional powers of the stomach and by judicious diet, but especially by considerate medication, to prevent the development of any organic disease of that organ. It is to enforce some of the truths hinted at that I beg to occupy the hour with a study of a few cases that illustrate some relations of gastric disorders to pulmonary phthisis. For convenience of presentation I will arbitrarily present these relations under four headings:

(1) Disorders that precede or are coincident with the development of tuberculosis.

(2) Disorders which attend the early stages of, and often mask the true lesion.

(3) Disorders that occur during the course of, and complicate the lung affections.

(4) Disorders which are due to the tuberculous process.

The subject is not a new one. In former times it was held that certain gastric disorders were essential factors in the development of some cases of phthisis, notably round ulcer of the stomach, and functional weakness of the organ. Both were more than significant if they occurred in early life. The latter was characterized by loss or perversion of the appetite, disgust for food, and particularly for special foods, as fats, with more or less indigestion, and associated with functional weakness of other organs, and with anæmia, emaciation and prostration.

In accordance with our view of tuberculosis of the present day, these gastric disorders do not predispose to tuberculosis, but rather cause such weakness of the tissues whereby their resisting power is lessened, and hence the individual may become more susceptible to the action of the bacillus tuberculosis. You will meet, as you go along in your career, with numbers of cases which will present such phenomena as I have indicated, and over and over again your attention will be called by anxious friends, on account of the grave condition of the patient, to the liability to or, in popular estimation, threatenings of tuberculosis. A presentation of such cases would simply mean a study of gastric disorders in which tuberculosis might subsequently arise. Bearing in mind this relationship, not causal but coincident, I will hasten to a study of cases illustrating the other groups.

The first patient that I present to you illustrates in the early period of the disease the insidious development of tuberculosis and the great care that must be exercised in its detection.

The patient is 20 years of age, and had been employed in a mill since she was 15. One year before admission she seemed to fail in general health. A few weeks' rest every month or two would be sufficient for her to regain the lost ground, only apparently to fall back in a short time. After a period of rest, she seemed perfectly well and returned in good health and spirits to her work. One month after this she began to experience morning nausea, soon vomiting ensued, and this occurred particularly in the morning. It persisted in spite of treatment and was apparently without cause. Her general health soon suffered, her menses ceased, and she began to lose flesh. The loss of flesh was thought to be due to the gastric disturbance. After two months of persistent disorder of the stomach the occurrence of slight flush in the evenings suggested the possibility of fever, and careful observations with the thermometer showed a marked rise in temperature. Again the patient was gone over, in order to explain the fever, when quite considerable disease of the apex of the right lung was discovered. Soon after this she came under our care, the admission to the Hospital being due to the occurrence of pulmonary hemorrhages. On examination the emaciated and anæmic girl was found to have phthisis, with lesions at the apex of the right lung, indicative of the second stage.

There is no doubt, in reviewing the case, that the early vomiting, apparently causeless, was of the nature of a reflex vomiting, due to the tubercular infiltration of the right apex. This accords with the testimony of clinicians generally, for writers have over and over again called attention to the danger of overlooking pulmonary tuberculosis, because of the marked gastric symptoms that attend it.

In this instance the early vomiting was due to irritation of the pulmonary branches of the vagus, reflexly exciting the vomiting centre in the medulla. Vomiting, remember, may be, and is usually, due in the later stages to the cough. Further than this, and to impress upon you the danger of overlooking incipient phthisis because of the prominence of gastric symptoms, the case gives us no other lesson.

The three cases which you now see before you are instructive examples of gastric disorders that arise in the course of tuberculosis. They illustrate how seriously the tubercular process may be influenced by such complications, or how much discomfort may be added to the distressing pulmonary symptoms.

It is not to be forgotten that in the long course of chronic phthisis gastric affections may arise just as likely from causes which are operative in health. When a patient has phthisis, indeed, he is more liable to disorders of the stomach, because more susceptible to the effect of deleterious influences. This patient is now suffering from a grave disorder of the stomach which has arisen long after the lung disease. He is 40 years of age and has had pulmonary symptoms, indicating the presence of tuberculosis for ten months. On examination, when admitted to the hospital, it was found that he had consolidation of the apex of the right lung. It was not on account of lung symptoms that he applied for treatment, but on account of subacute gastritis. During the latter part of September he had been drinking considerably. The local action of the alcohol produced the frequent effect, a subacute inflammation, whereby morning vomiting was induced. This vomiting became more continuous during the past week and caused great prostration. On the day of admission it was constant, resulting in the discharge of ropy mucus, sometimes tinged with blood. Nothing could be retained by the stomach. There were marked epigastric pain and tenderness.

I intimated that the patient was prostrated, and he stated that he had lost rapidly in flesh during the past two weeks and that he had had some fever. We found this fever to be marked, reaching 103° in the evening, falling to 100° or 101° in the morning. With the increased fever there were increased pulse rate and increased respiration. The usual pulmonary symptoms were present. The cough was particularly harassing and violently spasmodic, appearing to be of laryngeal origin and associated with some hoarseness. The gastric disturbance, the high fever and the severe cough were the most prominent symptoms. The physical signs did not indicate very active disease, and the fever was apparently due to the gastric disorder. The therapeutic indication was to relieve the gastritis. In fact, attention only could be paid to it. Mild external counter-irritants were used, and small doses of calomel and bismuth, frequently repeated, were given internally. Cracked ice was allowed, and whey or diluted milk, with lime water, given for nourishment. Careful management in this way had to be continued for a week before the gastric symptoms were controlled. It was most interesting to observe, however, that as they came under control the lung symptoms also abated, and, particularly, the fever gradually subsided. As soon as the patient began to take nourishment the fever lessened day by day. The patient has now been in the hospital four weeks,

and, as this chart indicates, the temperature has been normal for two weeks. His strength has returned, and he is again gaining weight, as indicated by the weight record. More instructive yet is the study of the physical signs. For three weeks the local process seemed to be quite active, as indicated by the presence of a large number of moist râles, and by the occurrence of abundant mucopurulent expectoration. The past week the râles have diminished very much and the expectoration has been reduced one-half. In the meantime no remedies whatsoever have been addressed to the lungs.[1]

One can readily see in a case, the gastric symptoms of which were not so striking and yet possibly just as pronounced in their deleterious effects on the system, how the evil train of symptoms might have been attributed to the lung trouble. How readily, too, could one have been led to the formation of a serious prognosis. We learn from the case not only the value of treatment, independent of the pulmonary process, but the grave importance of recognizing and weighing properly all possible complications before we venture upon a prognosis. I am much impressed by this view. I trust, therefore, that the picture presented by this case will be so impressed upon you as to always make you mindful of the very grave effects of any gastric disorder in the course of tuberculosis. The patient would have lost his life by any reckless disregard. Certainly he now experiences a new lease.[2]

The next patient, as you will see, is very anæmic and considerably emaciated. The early history of chronic tuberculosis of the lung is learned, and we find that he suffers from some lung symptoms. Night cough and shortness of breath are particularly distressing, but he complains less of these pulmonary symptoms than of the symptoms due to stomach disorder. His appetite is poor, his tongue is pale, flabby and furred, and he complains of great heaviness after eating, of some flatulence and of acid eructations. Food does not excite vomiting, but very quickly causes severe heartburn. The heartburn is characteristic, it continues for a long while after eating, is associated with the eructation of acid fluid. The digestion is prolonged and laborious. Indeed it seems, he says, as if a portion of one meal was not digested before the time came to take another. These symptoms are quite common in phthisical cases, but in addition there is another that is rather unusual. Every day, or, at the longest, once in thirty-six hours, the patient has had an attack of vomiting. The contents of the stomach are ejected and represent the remains of two or three meals in a partial state of digestion, associated with some mucus and considerable fluid.

The microscopic examination of the matter ejected showed the presence of

[1] The patient, Joseph Parker, remained in the hospital until March. He gained in weight and strength; he was without fever during the entire time, and his lung symptoms disappeared, while the physical signs indicated only slight advance of the process.

[2] In January of the present year the author was called to see a young lady, aged 22, with bilateral phthisis with excavations. She was taking creosote every three hours, antifebrin p. r. n., when temperature was above 102°, usually twice a day. Lactopeptine and syrup of the hypophosphites immediately after meals. Cod-liver oil and whiskey two hours after meals. Nitric acid and nux vomica before meals. A solution of apomorphia for cough. Inhalations twice daily. Every three or four hours a lozenge of codeia. An antiseptic solution to the nostrils. Liniments were applied to the chest. Soda mint was used *ad lib.* Strange to say, suppositories were not used; but in twenty-four hours at least eighteen doses of drugs passed the cardiac end of her stomach. Countless sprays, ointments, etc., were detained higher up. The patient improved on whiskey and food alone.

the torula, or yeast plant, and of bacteria indicating a high degree of fermentation. On physical examination of the stomach it is readily found that the organ is dilated. It is not necessary to detect this by distending the stomach with artificial means. The enormous area of tympany which you observe to be present so clearly defined, is due alone to distention of the stomach. There is no doubt that this extreme distention of the stomach and high degree of flatulence that are present very seriously increase the pulmonary complaint on which the patient lays much stress, that is, the shortness of breath. It is scarcely worth while to enter into a dissertation on the causes of dilatation of the stomach. I have intimated that it is simply a part of the general atrophying process and debility that attend tuberculosis. Of course, in such cases a moderate amount of gastritis arises primarily. The digestion is slow, and the products of digestion are retained in the stomach longer than normal, with increased amount of gas from fermentation. The internal pressure thus created, and which would be overcome in health, leads to overdistention, and muscular fibres waste or atrophy under these influences.

That this has arisen in the course of, and secondary to, the tubercular process, the testimony of the patient well proves. It is certain that prior to a short time ago his digestion was good, certainly his appetite was excellent.

The prevention of secondary affections of the stomach, like those in the course of phthisis, is only hinted at when speaking of the first case. Of course, all liability to gastric catarrh must be removed, and the general nutrition of the patient kept up as much as possible. Time forbids a full discussion of measures essential to secure these ends. The relief secured for this patient was simple. First, the medicines for cough were stopped, cod-liver oil and hypophosphites were taken away. The stomach was washed out daily with warm boracic acid solution, and small doses of bismuth given every three hours. Of course, a selected diet was ordered.[1]

That graver organic affections of the stomach may complicate the course of pulmonary phthisis is worthy of mention. It is not often that we find tubercular ulceration of the stomach; indeed, it is quite rare, and yet a possibility sufficient to make a study of its clinical phenomena quite important, as well as to impress upon us the liability of its occurrence in the course of this disease. I have had the opportunity, in looking up the literature of this subject, to study the cases that have been recorded; only some forty cases are specifically mentioned. Its rarity, therefore, is without question. Pathologists of very large experience, who have seen thousands of autopsies, have met with but one or two cases. Thus far it has also been uncommon in the experience of clinicians; at least its recognition by clinicians prior to death has been exceedingly rare. While it has been suspected in some of the cases which I have studied, in only one case had the diagnosis been made some months prior to death. It was a case of Gerhardt's, and the diagnosis was made because of symptoms similar to the symptoms of simple round ulcer of the stomach. In order that you may be led to suspect the presence of the affection, even if you cannot positively

[1] In two-weeks' time the gastric symptoms subsided, and, although in advanced phthisis, the patient lived comfortably, so far as gastric symptoms were concerned, more than six months.

assert it, some of the data collected from the source which I have mentioned will be given you. It is just as well that we are placed in such a position that we can judge of its possible presence in the course of any given disease which we may have. Until I had made a study of these cases I was unaware of some facts which certainly are of interest; and first, a further word regarding its rarity. You well know that tubercular disease of the intestines is most common, and it has long interested pathologists and clinicians to know why such an affection did not arise in the stomach as well. It now is very well proved that unless adhesions had formed, fixing the stomach, the localization of the disease in the stomach only rarely takes place. First, the acid contents of the stomach are destructive to the bacilli of tuberculosis if they remain long in that viscus. Second, the contents are hurried along so rapidly that lodgment does not take place as readily as in the bowel. Third, the anatomical structure of the stomach prevents tubercular infection. It is notable that lymphatic tissue and lymph space and lymph structures are not as abundant in this viscus as in the bowel. For these reasons, therefore, the rarity of tuberculous ulceration of the stomach has been explained.

Primary tubercular ulceration was not found to take place in any of the recorded cases. The ulceration developed in the later stages of pulmonary phthisis or subsequent to the commencement of tuberculosis of a more general character. The symptoms, therefore, arise in the course of tuberculosis of other organs. In addition to the rarity, it was quite of interest to find that many cases have occurred in children. Simple round ulcer of the stomach, you know, is very infrequent in children; while, compared with adults, tubercular ulceration of the stomach is quite common. One-third of the cases were those of children under fifteen years of age. The symptoms of this complication, as you may have judged from the above, are not present to a marked degree. Indeed, often no sign or symptoms were present during life. On the other hand, suddenly attention may be called to the stomach by the occurrence of one of two very grave symptoms—I mean either gastric hemorrhage or perforation of the stomach. In quite a large number of cases, without any previous intimation of disease of the stomach, a patient has been suddenly seized with hemorrhage, which, in all the cases, resulted fatally. It is particularly striking to note this characteristic quite often in children, and the importance of it you will appreciate when called upon to see a case of hæmatemesis, the cause of which is doubtful. You would naturally, the case being one of pulmonary tuberculosis, think that you had simply to do with a case of pulmonary hemorrhage, and so we have learned from the study of the cases that gastric hemorrhage may be confused with pulmonary hemorrhage. Indeed, from my own experience of tuberculosis in children, I am led to think that, given a hemorrhage of doubtful origin, with discharge of blood by the mouth, it is more likely to be due to a lesion in the stomach than one of the lungs.

Sudden severe pain in the epigastrium, with the rapid development of collapse, indicates the occurrence of perforation. I can well appreciate the nonrecognition of tubercular ulceration and perforation, unless the possibility of its occurrence was known or borne in mind. That it does occur the records of five

or six cases clearly show. In some of these cases the nature of the epigastric pain was not surmised, and hence it is important to remember that if in the course of pulmonary or general tuberculosis, it arises with grave symptoms, like those of perforation, ulceration of the stomach is to be suspected.

It occurs quite frequently that either of these two symptoms is the only manifestation of a gastric lesion. In the ordinary course of tuberculosis, their sudden occurrence would be a surprise. In some of the cases epigastric pain was present for a time prior to death. It was not associated with other symptoms in many of the cases, and did not lead to the suspicion of ulceration. The same may be said of epigastric tenderness as well as of other symptoms that are well known to arise in ulcer of the stomach.

As before intimated, the group of symptoms which indicate the presence of ulceration occur only very rarely in cases with sufficient clearness to cause a diagnosis to be made prior to death. It is more particularly, therefore, that mention is made of this lesion of the stomach to caution you and to teach you to be on your guard, in cases of tuberculosis. Of course, the occurrence of such ulceration, if recognized, would add more gravity to the prognosis of the case. Certainly, almost all proper attempts to eradicate the disease are futile when such a lesion exists.

Tubercular ulceration of the stomach is not primary, but follows tubercular disease of other organs, and is most liable to occur with general tuberculosis. The duration of a case of tuberculosis does not seem to favor so much its development as an intense general infection of the body.[1]

It is of importance, therefore, gentlemen, to bear in mind the possible occurrence of a gastric lesion when one treats any organic lung affection. Care, too, must be taken not to unduly treat the stomach by our modern methods, for fear of an accident from the suspected lesion.

[1] The author's case of tuberculous ulcer of the stomach was reported in Phil. Hosp. Rep., Vol. I., 1890. Negro, aged 40. Phthisis and secondary general infection. Large ulcers found in stomach. No symptoms during life. Patient was filthy in his habits, and always swallowed his expectoration.

MEMORANDA.

AMPUTATION AT THE HIP-JOINT.—HOW SHOULD IT BE PERFORMED?

THE publication in the May number of the UNIVERSITY MEDICAL MAGAZINE of an article, by Neal Hardy, M.D., of Upper Sandusky, Ohio, recording an amputation at the hip-joint, a preliminary laparotomy being made for the sole purpose of obtaining direct compression of the aorta to control hemorrhage, gives rise to the question—do medical men, as a rule, know how a hip-joint amputation may be done with absolutely no danger so far as bleeding is concerned? It seems strange that a surgeon should open the abdominal cavity, a procedure that must contain *some* element of danger, however skilfully done, if he were familiar with an operation that controls hemorrhage even more completely than can direct compression of the abdominal aorta, and yet is absolutely devoid of danger. Lest some reader of the article in question should be led to do the same operation by reason of non-familiarity with a simpler one, I beg to call attention to what is known as the "bloodless method of amputation at the hip-joint." This was first described by Professor John A. Wyeth, of the New York Polyclinic, in the *International Journal of Surgery*, and up to the beginning of the present year has been done five times—twice by Wyeth; once by Professor Wm. F. Fluhrer, of New York; once by Professor Chas. McBurney, of New York, and once by myself; *all were successful.* Certainly this is a brilliant result—five consecutive cases of recovery in an operation hitherto regarded as one of the most dangerous in surgery.

The patient is placed with the hip of the side to be operated upon well over the corner of the table; the foot is then elevated to allow the blood to gravitate toward the heart (or, if the nature of the trouble will permit, an Esmarch bandage should be used, applying it lightly over the seat of disease for fear of driving septic material into the circulation), and the subject is ready for the essential part of the operation.

Two steel mattress-needles, obtainable at any hardware store, each three-sixteenths of an inch in diameter and a foot long, are used. The point of one is introduced an inch and a half below the anterior superior spinous process of the ilium and slightly internal to it, and is made to traverse the muscles and deep fascia, passing about half way between the great trochanter and the iliac spine, just external to the neck of the femur and through the substance of the tensor vaginæ femoris, the point making its exit just back of the trochanter. Inserted thus, about four inches of the needle should be concealed in the tissues.

The point of the second needle is entered an inch below the level of the crotch, internal to the saphenous opening, and passed through the adductors, thus (Figure 1):

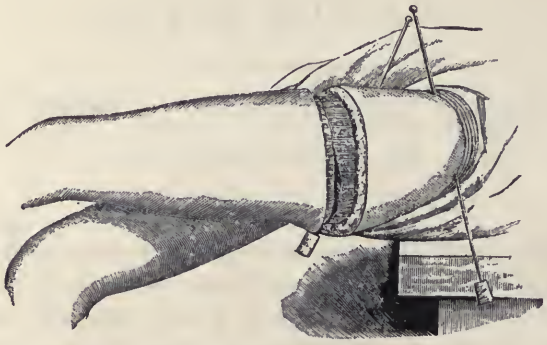

FIG. 1.

It should come out about an inch and a half in front of the tuber ischii. The points should be covered with corks to protect the hands of the operator. No vessels are endangered by these needles.

A piece of strong, white rubber tube, half an inch in diameter, and long enough when tightened to go five or six times around the thigh, is now wound very tightly around and above the fixation needles and tied.

The Esmarch bandage is now removed, if it has been applied, and the proper flap (including the subcutaneous tissues down to the deep fascia) is made and dissected up to a level of the lesser trochanter, at which point the muscles and vessels are squarely divided and the bone sawed through, as is shown in Figure 2.

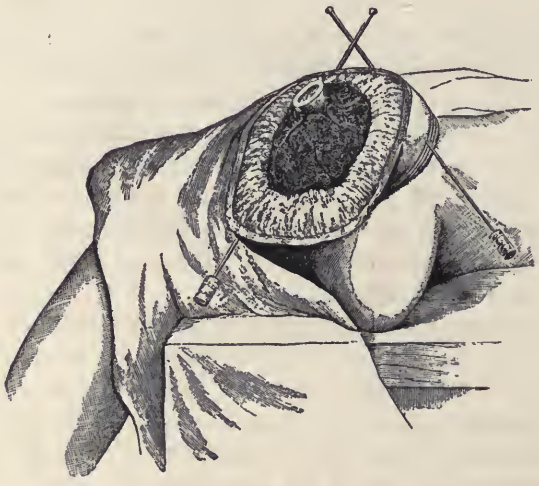

FIG. 2.

All vessels, veins as well as arteries, which can be seen, are tied with catgut, and the tourniquet slightly loosened by the assistant; the smaller bleeding

points are caught with the hemostatic forceps, and the elastic tube entirely removed and needles withdrawn.

The remaining portion of the femur is now enucleated by dividing the attached muscles close to the bone and opening the capsule as soon as it is

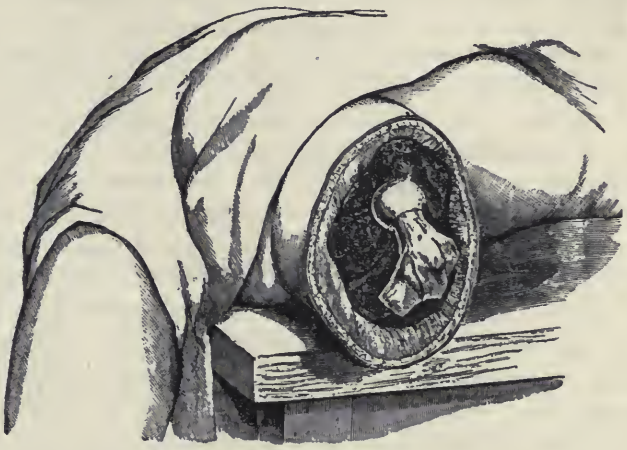

FIG. 3.

reached. On lifting the end of the bone in the direction of the patient's navel, and dividing the cotyloid ligament posteriorly, the air enters the cavity of the acetabulum and greatly facilitates division of the ligamentum teres (Figure 3).

After careful irrigation the wound is closed with proper drainage. If the circular cuff has been made, the appearance is as seen in Figure 4 :

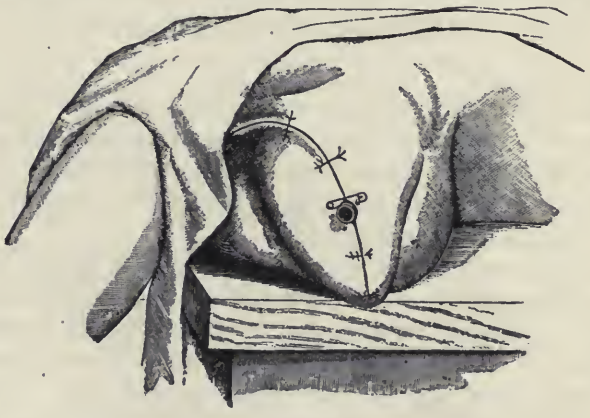

FIG. 4.

If the patient is very weak, or if there are reasons to fear the supervention of shock, the wound can be temporarily closed after sawing off the femur, and the remaining portion of the femur removed at a subsequent sitting. This was done in one of Prof. Wyeth's cases, the second operation being made on the seventeenth day after the first; enucleation was easily performed, and recovery was uninterrupted.

CASE.—Harvey M., aged 9 years, colored, was for some weeks an inmate of the City Hospital, Kansas City, suffering from osteo-myelitis of the shaft of the femur. An operation for excision of the diseased tissue was made October 21, 1890, before the class of the University, but there being but a mere shell left to represent the femur, the wound was closed and the patient returned to the wards. On October 24, the condition of the patient was so desperate that longer delay meant death, so he was again taken before the class and the bloodless amputation made. Scarcely an ounce of blood was lost. Convalescence was rapid. On December 8, he was again shown to the students, the wound having healed, and general appearance indicative of health. A few days later he was discharged from the hospital.

In view of the facts that the terrible death-rate after hip-joint amputation is chiefly due to hemorrhage—that compression of the aorta or iliacs has not rendered the operation less dangerous; that the figure-of-eight bandage of Esmarch, carried above the iliac crests or around the abdomen, and the transfixion by a single needle passed in front of the neck of the femur and beneath the vessels, over the ends of which a rubber cord is carried only in front of the thigh, as advised by Trendelenburg, as well as the rubber spica of Fourneau-Jourdan, have all proved far from satisfactory—is not the method above described worthy of further trial instead of resort being had to such desperate measures as abdominal section for the sole purpose of securing direct compression of the abdominal aorta?

EMORY LANPHEAR, M.A., M.D.,

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LOCAL IRRITATION PRODUCED BY THE APPLICATION OF IODOFORM.

THE systemic effect of iodoform continuously used upon large granulating surfaces is so well attested by large numbers of reported cases that further evidence upon this point is superfluous. Even after most conservative and judicious use of the drug, toxic action upon the heart or brain is observed occasionally as an expression of idiosyncrasy.

The possibility, however, of iodoform acting as a violent local irritant is not so generally recognized. That such action is rare is shown not only by the few reports in current literature, but by hospital and dispensary records. Thus, in upward of a thousand cases of leg ulcer treated by dusting with iodoform, we have noted an untoward effect in but five. These five show that the drug is not adapted to all granulating surfaces, and may at times excite violent inflammation.

The first case suffered for many years from a leg ulcer about two inches long and a half inch broad, located just above the external malleolus of the left leg. The skin surrounding the area of granulation was discolored and indurated. The granulations were small, blue-red, and freely secreted bloodstained offensive pus.

Iodoform was liberally sprinkled over the ulcer, which was then covered by protective and absorbent cotton. The dressing was completed by a firmly applied figure-of-eight bandage, covering in the foot and leg and running up to the knee.

The next day the patient again reported, declaring that she had passed a sleepless night on account of the stinging and burning of her bandaged leg. On removing the dressing the whole area covered by the iodoform was found to be intensely inflamed, the skin shredding off in places and the ulcerating surface being covered by small sloughs. The leg was hot, tender and markedly œdematous. Wet dressing was employed for three days. Then dustings with zinc oxide powder were ordered. In a week the condition was no worse than when the patient first reported. Two weeks later she was completely cured.

The second case occurred in the person of a man, the lower third of whose left leg bore the scars of many ulcers. The one for the cure of which he applied was situated above the internal malleolus. It was oval, with indurated edges, blue-red granulations and slightly inflamed surrounding skin. The discharge was bloodstained and offensive. It was moderate in quantity.

On hearing that the sore surface would be dusted with iodoform the patient vehemently protested, declaring that twice before had this powder been applied, and that each time it had undone the work of months of careful treatment. He stated that he would not again endure the suffering which always followed in his case the application of the "yellow powder." Iodoform was freely dusted over the ulcer and over the surrounding slightly abraded skin. Waxed paper was applied over the granulating surface, the limb was swathed in absorbent cotton, and a pressure-bandage completed the dressing.

The patient returned next day suffering but triumphant. He had passed the night in great pain. On removing the dressing, the leg was found to be intensely inflamed. It presented very much the picture of a violent case of rhus poisoning. The ulcer was sloughing and was rapidly extending. It required a week of careful dressing to restore this man to a condition as satisfactory as that which obtained when he first came under treatment.

The third case, a woman, aged 56, suffered from a leg ulcer for twenty years, which would heal and break down at intervals. For the last six years there had been steady extension of the ulcerating process till the ulcer reached unusual dimensions, almost entirely encircling the lower third of her leg, and extending from below the malleoli upward for five inches. Brick-red granulations, a thin, scanty discharge and indurated undermined edges were the characteristics of the ulcerating area. For three months this patient was dressed three times weekly. In this time the ulcer was reduced to the size of a dollar. She one day complained of increased pain and discharge, and iodoform was ordered. She objected to this powder being applied, declaring that one doctor had once nearly cured her in six months, when another applied iodoform, and after a week of great misery she was worse than she had been before treatment. The drug was freely dusted over the granulating surface, over this was applied a smooth surface, and the dressing was completed by a pressure-bandage.

The next day the patient returned very miserable and abusive. She had passed a sleepless night and was in great torture. On removing the dressing, the leg was found to be hot and œdematous, the ulcer was rapidly spreading, the cicatrix, the result of months of careful dressing, was everywhere breaking down. In three days the ulcer resumed almost its former dimensions. Eight months of treatment without iodoform finally cured it.

Two years later this patient again applied for treatment. She was then suffering from an ulcer, the size of a baby's hand, located below and about the

external malleolus of the left leg. This ulcer, she stated, had been extending for four months. It was dressed by means of ichthyol, boric acid ointment and zinc, together with the pressure-bandage for two weeks, by which time it had contracted to the size of a half-dollar. Iodoform was then sprinkled freely over the granulations. No irritant effect followed. The powder was used for a week and was then substituted by another dressing, as the healing did not seem to be progressing satisfactorily.

The fourth patient, observed within the last few weeks, was a healthy farmer suffering pain from a neglected traumatic ulcer, involving the anterior middle third of the leg. The granulating surface was three and a half inches long and two inches wide. Under strapping and pressure, rapid improvement took place. When cicatrization was complete, iodoform was dusted over the ulcer and the region about it, absorbent cotton and a roller bandage completing the dressing.

The patient returned next day with a history of much suffering. The region upon which the iodoform was placed was violently inflamed and covered by large blebs, and the skin was red and œdematous for some distance around. Under a different dressing, prompt healing took place.

The fifth patient, a driver, suffered for more than a year from a traumatic ulcer involving the anterior middle third of the left leg. The granulations were small, brick-red, secreted a thin, irritating pus and were surrounded by blue, indurated, slightly excoriated skin. In one week the pressure-bandage had almost completely cured this patient. His leg was then dusted with iodoform. He passed a sleepless night and returned next day with every portion of the skin upon which iodoform was placed vesicated. In ten days he was completely cured. Two weeks after the single iodoform application, a macular eruption, involving nearly all parts of the body and attended by intense itching, broke out. This was pronounced an iodoform eruption by Professor Duhring.

A review of the literature of the subject will show that there are occasional reports of the irritant local effects of iodoform. The dermatologists in particular have observed this. The general surgeon, however, is not so ready to concede it, though Bigelow distinctly states that in his ward experience he has found that on certain subjects the drug acts as a local irritant, and in this way may cause much trouble.

When the surgeon employs iodoform it is usually as a first application, over which is placed a bichloride dressing, the occasional irritant effects of which are so well known that in case a dermatitis is excited this is at once ascribed to the action of the mercuric salt.

In the cases we observed the dermatitis excited by iodoform was exactly like that incident to a severe attack of rhus toxicodendron poisoning. Whether the development of this violent attack was dependent upon idiosyncrasy or upon a peculiar condition of the discharge from the ulcerating surface, cannot be said. In one instance the urine was examined and was found healthy. In two instances the iodoform twice produced the same effect, though one of these patients, upon being again tried, exhibited no undue reaction to the drug.

The cases we have observed have at least taught us to place some belief in the statement of patients who say that iodoform does not agree with their

ulcers, and when severe inflammation follows the application of an iodoform-bichloride dressing to regard with suspicion the dusting powder as well as the mercury.

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T. B. LIPPINCOTT,
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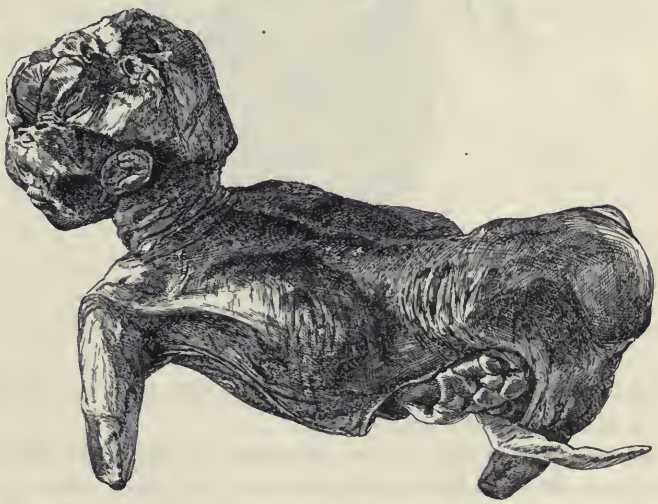
CASE OF A MONSTER PROBABLY CAUSED BY MATERNAL IMPRESSIONS.

JANUARY 14, 1889, I was called hastily to Mrs. X., a German-American, who had married a man of Irish family.

Both were vigorous, healthy people, the husband being 26 years, and wife about 24 years of age. They thought that the period of pregnancy should be estimated at about four and a half to five months. The wife was greatly depressed and exhibited considerable emotional excitement, almost hysterical in form, between the pains. The grandmother was also a sympathizer and kept repeating, "I knew it would turn out badly," using German idiom in her speech. While waiting for the completion of the premature labor, the following history was elicited: About two months after suspicion of pregnancy



was announced, a pet kitten to which the family were prone to give much attention on account of its frolicsome ways, was suddenly fallen upon by a large dog, killed and partially dismembered. The skull was crushed in, the limbs torn off, and the lifeless and mangled remains left at the feet of Mrs. X., who had succeeded in driving the dog away. She suffered from shock and grief very much, taking to heart the loss and tragic death of the poor kitten. However, in a little while the duties of housekeeping dispelled the hateful impression, and up to the evening of 14th she was in usual health.

While the labor was progressing the grandmother kept constantly muttering and talking, "I knowed it," "It will be like the 'Katz,'" etc.

The termination of labor was accomplished without any remarkable incident. The child breathed for a few moments, then expired.

The photographs tell the story. Both upper extremities were missing from the humeri down. There was no attempt at the formation of a forearm. The right humerus was terminated by a round knob as seen after amputation. The left showed irregular surface, but not full formation of condyle. Both thighs terminated in a knob, and the stump resembled an amputation without the cicatricial seam. The portions of the upper extremities were well formed as also were the thighs of lower extremities. Abdominal viscera were normal, as were the heart and lungs. The peculiar formation of the head was shown by want

of development of the parietal bones. The brain was not fully developed, especially the lateral convolutions.

This specimen was shown to the members of Northern Medical Society. The case is presented without comment, as the subject of maternal impression upon the fœtus has yet to be elaborated.

JAMES COLLINS, M.D.

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A CASE OF TUBAL PREGNANCY.[1]

THE case from which these specimens were removed came under my care while attending the patients of my friend, Dr. A. H. Mellersh, of Roxborough.

The history is as follows:

[1] Read before the Philadelphia Pathological Society, May 28, 1891.

Mrs. L., aged 25, has one child four years old. Since the birth of this child four years ago, she suffered from periodical attacks of severe abdominal pain. The attacks of pain were so great at times that she would almost faint. Such attacks were most likely to occur during a movement of the bowels. I saw the patient for Dr. M. on a Monday afternoon, obtained the above history and the additional fact that she had missed her monthly sickness for three months, they having appeared on the previous Thursday. I found her with severe abdominal pain, belly tense, swollen and tender, pulse good, bowels constipated; her temperature being 100°.

Vaginal examination revealed an anteflexed uterus with a mass posterior and to the right side, tender on pressure. On thinking over the case, I dismissed my first impression of possible extra-uterine pregnancy and came to the conclusion, from the history of long-standing, recurring pain, evident signs of peritonitis and a mass, that it was due to some inflammatory trouble in the tube or ovary. How I erred, the sequel and specimen show. The patient was given salines in small repeated doses, and the next morning she was better. The belly was still tense and painful, but evidently better. The next morning the patient seemed entirely well, free from pain, anxious to eat, belly flaccid. She appeared so well that I hesitated about making another visit, as she was not my own patient. The mass posterior to the uterus still persisted, but was much less tender to pressure. On my return to my office at 7 P. M. that evening, forty-eight hours after my first visit, a call was waiting that Mrs. L. was not so well. There seemed to be no urgency, as the call had been left two hours before, and I took dinner and arrived at the place about 9 P.M.

I found the woman with this history: She was perfectly well until 2 P.M., when, on arising to have the bowels moved, she was seized with excruciating abdominal pains. The pains and distress were so severe her friends despaired of her life and sent for her clergyman instead of me. On the clergyman's arrival the woman appeared better, and he advised them there was no probable danger, but they had better send for me, which they did, leaving the not urgent call as above. I found the woman collapsed, pulseless, blanched and semi-conscious.

I at once feared ruptured extra-uterine pregnancy, and sent off in hot haste for Dr. John B. Shober. He kindly responded, but reached the house after the woman's death. At *post-mortem* held seventeen hours after death, the following conditions were found:

Body of well-formed female, with no external marks; abdominal walls very fat. Incision through peritoneum allowed bloody serum to exude. On opening the belly, four quarts of bloody serum, pure blood and clots were removed; one mass, which was thought to be the ovum, was found floating free in the abdominal cavity. There were a few recent peritoneal adhesions between the coats of intestines. A mass was seen posterior to the uterus. This mass, together with the uterus and all appendages, was removed and examined. The mass was adherent also to the posterior pelvic wall. On examination, both ovaries were found normal, but bound down with adhesions to the posterior part of the uterus. The fimbriated extremity of the right Fallopian tube appears to cap a mass the size of a hen's egg, which is covered externally with a thin, semi-transparent membrane apparently containing bloodvessels. This mass is ruptured at the lower outer extremity, this rupture being the evident seat of bleeding. From the ruptured portion protrudes what are apparently blood-clots. On dissecting up the somewhat fleshy walls is seen a cyst the size of a pigeon's egg, with transparent walls, containing a clear fluid and an embryo, about three-quarters of an inch long. There is no trace of deciduum in the uterus. The right ovary contains a corpus luteum. The mass, which, at the *post-mortem*, was supposed to be the escaped ovum, was unfortunately spoiled. Its walls, however, consisted of a transparent membrane, and it apparently contained liquid. It certainly had a cavity, but no trace of an embryo was found. In the absence of an accurate examination its precise nature cannot be stated, and unless this was a twin pregnancy, it was certainly not an ovum, as the embryo is in the specimen presented.

This would have been an excellent case for operation; the mass could easily have been tied off and the woman's life saved. Even had she been seen immediately after the rupture, doubtless her life could have been saved. The mistake in diagnosis, in view of the very positive and definite history of long-standing pains notwithstanding the history of missed menses, was possibly pardonable; but the case is one which goes to show how dangerous delay in operating in cases of evident tumors of the appendages often proves. If I had called a surgeon at once, my friend's patient, in all probability, would to-day be living.

M. HOWARD FUSSELL, M.D.

MANAYUNK, PA.

CLINICAL DEPARTMENT.

PRESBYTERIAN HOSPITAL.

REPORT OF A CASE OF A DISSECTING ANEURISM OF THE AORTA—RUPTURE AND DEATH.

[Service of DE FOREST WILLARD, M.D.]

THE patient, a colored man, aged 64, unmarried, and a laborer, occupied at Dobson's carpet mills, this city, was admitted to the wards of the Presbyterian Hospital with the following history: On the day previous to admission, April 8, 1884, a bale of carpet, weighing about 300 pounds, fell from a height (distance not stated), striking him upon the shoulder; in the effort made to retain his balance he sustained a severe strain of the back and chest. On admission to hospital he complained of pain and soreness over thorax and small of back. Attempts at motion aggravated the pain, which was constant in character, even when patient was lying quietly. The bowels were moved naturally several times. An examination of the urine showed a normal condition of the excretion. No paralysis or other evidence of spinal injury present. No cough was noted. The treatment was purely symptomatic: morphine for the pain, a stimulating liniment for the sprained muscles and absolute rest. The evening temperature was 100½°. (The character and rate of the pulse are not recorded in the notes.)

April 10, 1884. Patient's appetite is good, and he feels easier than yesterday. In the latter part of afternoon he complained of a severe paroxysmal pain about and below the region of the umbilicus. The abdomen was somewhat distended and tympanitic; a carminative was therefore administered. From this time on, until 10 o'clock in the evening, he was apparently resting quietly. At this latter hour he suddenly arose, jumped out of bed, placed his hand over the region of the heart, and with an exclamation of pain sank on the floor. Two minutes later he was dead.

The autopsy, held eighteen hours after death, revealed the following facts:

Rigor mortis marked; muscular system well developed, and subject generally well nourished.

Upon opening the thorax the right pleural cavity was found to be completely filled with a straw-colored pleuritic effusion of a rather thick consistency. Covering this lung and forming a perfect sac for the fluid was a thick layer of dense, fibrous, closely-adherent

lymph, from one to two lines thick, and so tough that it could not be readily torn by the fingers. The upper lobe of the lung was crepitant but pressed closely up under the clavicle, and, as a consequence, was much diminished in size. The middle and lower lobes were flattened against the spinal column and ribs and were bound down under the lymph-sac, much in the same way that the kidneys are fastened beneath the peritoneum, only more tightly. The lobes of this viscus were nowhere over half an inch in thickness, and were absolutely impervious to air. Upon section of this portion of the lung it was found to be tough and sank readily in water. There was nothing like a pneumonic condition present.

An examination of the left pleura revealed its cavity filled with a currant-jelly clot and blood-serum, the lung being squeezed into the upper part of the thorax. The lung tissue was not adherent, save in one small spot, and its structures were otherwise entirely normal.

The heart was slightly hypertrophied, but the valves were normal.

The aorta was normal in size and condition until below the arch. Just below the descending portion of the arch was an atheromatous spot, and immediately beneath this was found a transverse fissure on the outer side of the vessel, nearly half an inch long, extending through the middle and inner coats of the artery. The outer coat or adventitia had been dissected from the muscular layer for about half its circumference, and for a distance of at least five inches below the diaphragm. At this latter point the artery was torn in the dissection. There was no evidence of another opening readmitting the blood to the aorta. About an inch below the opening through the two inner coats was a large rent in the adventitia, through which the blood had entered the pleural cavity. At this point the adventitia seemed somewhat distended, but only slightly so below it.

The other organs of the body were normal.

The history of this case seems to indicate that the direct cause of the aneurism was the severe strain sustained at the time of injury, and indirectly the weakened condition of the aorta, as shown by the atheromatous changes noted in the coats of the vessel.

The features of this case worthy of special note are:

(1) The length of time lived after the injury.

(2) The character of the aneurism, its diffuse nature, involving not only the thoracic, but also the abdominal aorta.

(3) Its causation, indirectly an injury, producing sufficient strain upon a vessel already weakened by disease.

(4) Its termination by rupture into the left pleura.

(5) The fact that but one opening was found in the aorta communicating with the aneurismal sac.

(6) The condition of the lung and pleura of the right side of chest.

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FLINT'S PILL IN CHLOROSIS.

(Service of M. HOWARD FUSSELL, M.D.)

THE *New York Medical Journal* of May 18, 1889, contained a short article, by Dr. Austin Flint, on a saline chalybeate pill, devised by him and used in cases of anæmia and of Bright's disease of the kidneys. The pill contains all of

the important inorganic salts of the blood in about the proportion found in the blood, with an excess of sodium chloride and a small amount (half a grain) of reduced iron.

To test its value in chlorosis, and from the well-known fact that many cases will not bear the large doses of iron usually given, the writers have used it in all the cases of chlorosis which have presented themselves at the University Hospital Dispensary during the past few months. We present histories of ten cases which we have been able to observe for a prolonged time. This does not include all of the cases in which the pill has been used and found of value.

The exact formula of the pill, as directed by Dr. Flint, is as follows:

℞.	Sodium chloride	3 drachms.
	Potassium chloride	9 grains.
	Potassium sulphate	6 grains.
	Potassium carbonate	3 grains.
	Sodium carbonate	36 grains.
	Magnesium carbonate	3 grains.
	Calcium phosphate	½ drachm.
	Calcium carbonate	3 grains.
	Reduced iron	27 grains.
	Carbonate of iron	3 grains.

S. In capsules No. 60. Two capsules three times daily, after eating.

CASE I.—Kate F., aged 16, single, with good family history, complains of general weakness, dyspnœa and œdema of feet. Her skin was blanched, conjunctivæ pale; an anæmic murmur was discovered at the pulmonary cartilage. After one month's treatment the patient had entirely recovered.

CASE II.—Jennie L., aged 22, single, native of Ireland; in this country three years. She presented herself, complaining chiefly of marked dyspnœa. Her skin and conjunctivæ were blanched. Examination of chest showed an anæmic murmur at base, no organic lesion of lungs or heart. After three weeks' treatment she presented herself, feeling entirely well.

CASE III.—Mary O'Keefe, aged 20, single, good family history. She complained of marked dyspnœa, nosebleed and general weakness. An anæmic murmur was heard at aortic cartilage, her skin and mucous membranes were blanched. After six weeks' treatment the girl entirely recovered, and remains well at present writing.

CASE IV.—Bella C., aged 22, single, good family history. Complains of general weakness. Her skin is of the peculiar chlorotic hue. Her mucous membranes entirely colorless. Murmur at the base of the heart, and venous hum in the vessels of the neck. After eight weeks' treatment the patient expressed herself as being perfectly well. Her mucous membranes were of good color, and the chlorotic color had entirely disappeared.

CASE V.—Amelia M., aged 17, single, Swedish, in this country five years, has a negative family history. Complains of general weakness, œdema of feet and marked dyspnœa. Her skin was of chalky whiteness. Examination of chest revealed a murmur at base of heart, with venous hum, but no other abnormalities. After eight weeks' treatment the patient looked and felt entirely well.

CASE VI.—Josephine B., aged 16, single, presented herself with irregular menstruation, general weakness and dyspnœa. A venous hum was heard in vessels of neck; skin white; mucous membranes blanched. Two months after beginning of treatment she had entirely recovered.

CASE VII.—L. A., aged 19, single, Scotch birth, complained of weakness and dyspnœa, the especial feature being dyspnœa. Examination of her chest was negative. Her skin had the typical chlorotic color. One month after beginning of treatment she was entirely well.

CASE VIII.—Maggie O., aged 19, single, complains of weakness and marked dyspnœa. Examination showed no organic lesions. Her skin and mucous membranes were blanched. She remained well after three months of treatment.

CASE IX.—A., aged 17, single, has no ambition; she cannot be prevailed upon to take exercise, eats but little, and has much headache and dyspnœa. There is a murmur at base of heart. After four weeks' treatment she had very much improved, and to-day is like an entirely different girl.

CASE X.—Mary M., aged 16, single, injured in mill two years ago; for the past year has been losing flesh and strength and growing pale. On examination there is a murmur at the base of the heart. The skin is blanched. Dyspnœa is especially marked. After four weeks' treatment the patient has entirely recovered.

In all cases two pills were given after each meal. As seen above, all of these cases were entirely cured. The blood count was not taken in all the cases, hence it was thought advisable to omit it from the histories of those cases in which it was taken; but in every instance where it was examined, the condition of the blood improved in proper ratio with the other symptoms.

The improvement was usually first noticed in the color of the skin. Without exception, improvement was noticed in this particular within a week after beginning the pills. The strength gradually improved, and the dyspnœa, which was so marked in all of these cases, finally entirely disappeared. That this improvement is permanent, and not simply due to the rest prescribed in all cases, is proved by the fact that they all continued in good health after returning to their work, and that most of the cases had been idle before taking the pills. The improvement in these cases is, perhaps, no more marked than that seen after the use of Blaud's pill, or some other good form of iron, but we think these cases, together with those published by Dr. Flint, go to prove that large doses of iron are not necessary in all cases of chlorosis, and that the combination of salines and iron in the pill is a most effective remedy in anæmic conditions.

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EDITORIAL.

OCULAR AFFECTIONS IN DIABETES.

QUITE commonly the statement is made in text-books that there is no one condition of the retina characteristic of diabetes, in spite of the fact that in advanced cases various complicating changes in this membrane are discoverable. It is well known that Leber insisted upon the fact that whenever a retinal hemorrhage was discovered, or a hemorrhagic retinitis presented itself, the study of the case was not complete until the urine had been examined for sugar. Moore, in our own country, after an excellent *résumé* of the ocular affections in diabetes, concluded that an examination of the urine for sugar was necessary in every obscure ocular affection. Recently some interesting additions to our knowledge of this subject have been made by Schweigger and Hirschberg.

Touching the most common ocular complication in saccharine diabetes—cataract—the former observer believes that those cataracts only should be considered diabetic which occur as bilateral lesions, of rapid development, in young individuals, the subjects of well-advanced diabetes. In reply to this, Hirschberg (*Deutsch. med. Wochenschrift*, No. 13, 1891) pertinently asks the question, "At what time of life is it forbidden that diabetes shall exert an influence upon the lenticular system?" He further points out the fact that diabetic senile cataract is ten times as frequent and ten times as important as the juvenile variety, be-

cause after operation its subjects may live long, while the prognosis to life is much more fatal in the youthful cases. According to him, the essential characteristics of the diabetic senile cataract are the proportionate though quick development of the cataract, the disproportionate disturbance of visual acuity, the anomalous form of the lenticular opacity, and the frequent complication with retinal hemorrhage, discoloration of the papilla, and disturbances of vision without ophthalmoscopic changes.

In regard to retinal disease, Schweigger states that he has seen the retinal changes described by Hirschberg both with and without diabetes; in reply to which the latter observer expresses his entire willingness to believe that the sharply separated chief form of diabetic retinitis *may* be confused with other types of retinal disease, but disputes the fact that it *must* be thus confounded.

Among 7,176 cases of eye disease, Hirschberg has observed 103 diabetics, and upon this bases his belief that by disturbances in the visual organs this disease is sometimes first discovered. There are a number of indications, some of which have important weight, others less important significance, but none of them are to be considered worthless. Especially worthy of note are cases of pure paralysis of accommodation in middle life, late myopia occurring between forty and sixty years of age without opacity of the lens, the chief forms of diabetic retinitis, and bilateral, quickly-developed cataract in emaciated young persons. At the same time, chronic opacity of the lens in old people may serve to discover diabetes which has long remained undetected, and subconjunctival hemorrhages deserve attention, although they are a rare complication.

Pursuing his subject still further, Hirschberg divides the diabetic disturbances of the visual organ into two chief groups: those which occur without, and those which occur with, tissue changes. Among the first he reckons the disturbance of accommodation, either weakness of this function, paresis, or evident deterioration of vision at long ranges. One occurrence is the diabetic myopia, already referred to, and more frequently visual defects, without ophthalmoscopic findings, in which a scotoma appears in the centre of a practically normal visual field are found. Quite seldom diabetic hemianopsia has been observed, but double vision, usually from paralysis of the abducens, less frequently of the oculo-motor, often has been recorded, sometimes as the first evidence of the manifestations of the disease.

In regard to the second group in which there are tissue changes, Hirschberg speaks of furuncles upon the lid, in every age of life; of eczema of the lids and repeated crops of styes, especially in elderly people; of subconjunctival hemorrhages, already described; of relapsing episcleritis, and keratitis in the form of obstinate ulcers in adults, or the so-called neuro-paralytic type when there has been paresis of the fifth pair as a complication. Diabetic retinitis is seen in an exudative and a hemorrhagic form. It belongs to the later manifestations of diabetes when gangrene of the feet, carbuncle and hemiplegia are complicating circumstances, and practically is always present in long-standing cases of diabetes, although sometimes not easy of detection. Vitreous opacities, either as the result of retinal hemorrhages or in association with the retinal changes coincident with high myopia, frequently have been noted. Finally we have atrophy

of the optic nerve, with diminution of acuity of sight, contraction of the field of vision and central scotomata.

The lesson to be learnt from all of this is, as Hirschberg has said, that while the signs are not always diagnostic of diabetes, none of them are worthless. We are very apt, in cases of retinal and optic nerve disease, to examine the urine for albumin, but how frequently the examination for sugar is omitted. Not only should this examination be made if these lesions are present, but in every case of cataract, and, in fact, once more to quote the conclusion of Moore, in every obscure ocular affection, or in every ocular affection where under the ordinary measures there is a singular lack of response to treatment, this test should constitute a routine practice. This, perhaps, is well illustrated in those forms of iritis which are sometimes seen in connection with diabetes, and is further emphasized by the instances, quoted from Hirschberg's paper, of eczema of the lids, styes and keratitis occurring without evident cause, with marked tendency to relapse, and with distinct indifference to therapeutic measures.

THE ABORTIVE TREATMENT OF GONORRHŒA.

The treatment of gonorrhœa in its early stages by strongly irritant injections, particularly those of nitrate of silver, at one time exceedingly popular, is now seldom applied by those most experienced in venereal diseases. This is because such treatment in practice was often ineffectual, and because when it failed the violence of the original attack of urethritis seemed to be greatly exaggerated. As a result of this increased severity and duration of inflammation, tight strictures were much more commonly observed than was the case when gonorrhœa was treated by less irritating injections. It was also claimed that epididymitis was a very common sequel of anterior urethritis treated by nitrate of silver. The latter statement has, however, been shown to be false.

There are, then, sufficient grounds for abandoning a treatment which is so uncertain as to its successful issue, and is liable to be followed by a condition more grave than that for the cure of which the remedy is applied. There have always, however, been a number of practitioners who steadfastly adhered to the abortive treatment of gonorrhœa by silver nitrate, and who could show records in proof of their statements that in suitable cases the method was followed by sufficiently satisfactory results.

It has lately been proved experimentally that silver nitrate acts as a germicide upon the gonococcus even more powerfully than bichloride of mercury, and the employment of this drug in weak solution has been advocated as an excellent continued treatment in gonorrhœa.

Both the gonococcus and nitrate of silver produce the same effect upon the urethral mucous membrane; that is, they cause a desquamation of the epithelium and an active inflammation of the deeper structures. The nitrate of silver, however, acts very rapidly—within a few hours—while the gonococcus requires several days to produce its full irritant effect. If, then, before the gonococcus

has time to penetrate more deeply than the epithelium, an injection of silver is employed, it seems fairly reasonable to hope that it may not merely destroy the microbe, but may also cause it to be thrown out from the urethra by occasioning almost immediately an active inflammatory discharge, which, from its owing its cause solely to a chemical irritant, may be expected to subside entirely in a few days. If, however, the gonococcus has had time to penetrate deeply within the mucous or submucous layer, further irritation cannot accomplish its throwing off, but will simply diminish tissue resistance, and add to the pabulum of the invading microbe, thereby increasing its multiplying powers.

It seems clear, then, that the abortive treatment cannot be entertained except in the very earliest period of a gonorrhœa; that is, when the tickling at the meatus and the drop of clear or slightly clouded mucus denote that the epithelium is invaded. Picard, the ablest modern exponent of the abortive treatment, holds that a red meatus, with swollen, everted lips, a turgid glans and intense pain, constitute absolute contraindications to this method of treatment, even if the case is seen early in its course.

The strength of the injection should vary from fifteen to twenty grains to the ounce of water. This produces a sufficient degree of irritation, yet is not strong enough to be followed by subsequent cicatricial contraction. The patient should first be instructed to urinate. Then the nozzle of a blunt-pointed syringe should be inserted into the meatus, the urethra should be compressed about two and a half inches farther back, so that the injection may not penetrate more deeply than is required, and the silver solution should be forced in so that all the urethra anterior to the point of pressure is fully distended. The solution should be retained a few seconds; it can then be allowed to escape by relaxing the pressure of the nozzle against the meatus. The anterior portion of the urethra should be distended and emptied till the syringe contains no more fluid. Urination should be postponed after this as long as possible.

According to Picard, the pain of this treatment is rarely severe. In a few hours there is a yellowish-white running, often bloodstained. This diminishes, becomes white, and in twenty-four hours is changed to a purely serous discharge, which entirely disappears in a few days. If the free discharge persists for from twenty-four to thirty-six hours, the treatment may be repeated, provided the parts are neither red nor painful.

The unfortunate part of this method is that patients rarely present themselves before the invasion of the urethra is too far advanced to admit of the abortive treatment. In suitable cases, however, it is a safer method and gives fairly constant results.

BOOK NOTICES.

PRACTICAL NOTES UPON URINARY ANALYSIS. By W. B. CANFIELD, M.D. Detroit: G. S. Davis, 1891.

This volume is issued in the current series of the Physician's Leisure Library, and is uniform with the others of the same set in the style of presentation. The field to which such a series of publications as the Physician's Leisure Library is particularly adapted is that of the monograph, and in presenting a work upon such an extended subject as the examination of the urine it is not fair to expect more than the merest outline of the subject-matter. As such the work in hand can claim some merit, although for practical purposes beyond this limit it is worthless. This tendency to epitomize is peculiarly American; and while there is doubtless a demand for the class of works thus prepared, there must be a question in the minds of those who are interested in the dignity of the profession in this country as to the propriety of catering to it. The vast majority of our medical schools are limited by such brevity of curriculum that, in order to in any manner cover the scope of medicine, thoroughness of study is entirely waived; and but a small proportion of our graduates have inculcated in them any distinct idea of the necessity of any more than a smattering knowledge of the branches which do not bear directly upon their work in the practice of medicine. Such books as this of Dr. Canfield's find their excuse only in such a state of affairs; in other circumstances they would not be tolerated and could not be published. Under the existing conditions, however, it is probably useless to inveigh more against their existence; the fault can scarcely be laid against them, but to the wretched circumstances which have called them into existence. Canfield's book is by no means especially deserving of such a tirade; it is simply one of a class of books for which there should be much less room than is accorded. Among epitomes it is better than the majority; its faults are those of incompleteness. What is presented is said clearly and concisely; and particularly upon the subject of the appearance of the sediment is the author felicitous, much of the matter therein being drawn from original observation.

THE MODERN ANTIPYRETICS: THEIR ACTION IN HEALTH AND DISEASE. By ISAAC OTT, M.D. Easton, Pa.: E. D. Vogel, 1891.

To no class of therapeutic agents, within the past few years, have there been so many varied and important additions as to the antipyretics; and there seems yet to be no end to the possibilities of synthetic chemistry in producing compounds capable of reducing bodily temperature. Dr. Ott's timely essay has collected into convenient form our present knowledge of the physiological action and therapeutics of the most important of these drugs, enriching it by experiments and observations made under his own eyes. The first section treats of the nature and theories of fever, after which the chemistry of the antipyretics is briefly discussed. This is followed by a more elaborate study of the question, how these drugs act in normal and pyretic conditions. The drugs individually considered under "Therapeutics" are kairin, hydrochinon, thallin, antipyrin, antifebrin, phenacetin, exalgin, pyrodin, methacetin, antithermin and antisepsin.

In conclusion he considers the value of antithermics in typhoid fever and speaks most favorably of the employment of the cold bath, which, he says, "has neither the depressing action of modern antithermics upon the heart, nor their irritating action upon the kidneys. For the same reason quinine is to be preferred as an occasional antithermic in the grave hyperpyrexia of typhoid, unless the symptoms denote great cerebral excitation, or the so-called meningitis, when antipyrin is to be preferred. Antipyrin is the least harmful, as it does not act upon the hemoglobin like kairin, thallin, and pyrodin, or cyanose like antifebrin."

PHILOSOPHY IN HOMŒOPATHY. By CHARLES S. MACK, M.D., Professor of Materia Medica and Therapeutics in the Homœopathic Medical College of the University of Michigan. Chicago: Gross & Delbridge, 1890; 8vo, pp. 174.

In the collection of essays here reprinted, the author endeavors to show the "reasonableness" of homœopathy upon *a priori* grounds. He writes clearly, temperately, and with evident sincerity. His argument is tinged with mysticism throughout, and in one part is entirely mystic. We quote a few passages: "Man to be radically reformed must confess his sins. . . . . It seems as if one does, in taking a homœopathic drug, that which is analogous to confessing a sin. . . . . The Commandments . . . tell us almost, if not quite, exclusively of the things we are *not* to do, and the theory of homœopathy seems in keeping with the principle thus implied. May not a homœopathic drug exhibit, to what of health and strength remains in the system, an image of effects to be shunned, and would not this be analogous to what the Commandments do in so far as a negative form obtains in them?"

Of course this sort of reasoning may seem relevant to one who says "causes in the immaterial world which never cease but are in constant operation give rise to the quality of the pathological tissues which constitute [an] abscess;" but to the scientific observer, it seems—to say the least—inconsequential.

The distinguishing characteristic of these essays is their preference for theory over fact, speculation over observation, "immaterial" over demonstrable considerations. It is true that facts are lauded and theories decried, in words—but the tenor of the essays is as stated.

A notable merit of the author is his candid confession that a large part of the practice of so-called homœopathists is not homœopathic. He defends this practice apparently to his own perfect satisfaction, though not to ours. On the whole, the book is valuable to the student of the history of error as exhibiting at once the weakness of homœopathy, and that inherent tendency of certain intelligent minds to mysticism, which gives to "homœopathy and kindred delusions" their amazing vitality.

FEVER: ITS PATHOLOGY AND TREATMENT. By HOBART AMORY HARE, M.D., B.Sc. Philadelphia and London: F. A. Davis, 1891.

Horatio C. Wood's early and able researches on the subject have exercised such a great influence in the further study of heat phenomena, that to-day the American School leads the medical world in these highly important investigations. After this investigator's work on "Thermic Fever," many valuable contributions, by other American authors, have been published, notably those of Wood, Reichert and Hare, and subsequently those of Ott, Reichert, Evans, with perhaps two or three others.

The latest work on this interesting subject is the one we have before us. It consists of an essay originally entitled "The Uses and Values of Antipyretics," which was awarded, early in 1890, the Boylston Prize of Harvard University. It now appears in book form under the new title of "Fever: Its Pathology and Treatment," as No. 10 in the Physicians' and Students' Reference Series.

Apart from the fact of its having received a prize, which in itself is a great recommendation, Dr. Hare's work is highly valuable from a scientific and practical point of view. The subject is ably treated, both experimentally and clinically. The author has exhausted the literature of the subject and has added such a great mass of original experimental research to that of clinical evidence, that the work is more than a compilation of other people's thoughts.

After a brief study of the phenomena of fever, the drugs commonly employed to combat it, such as quinine, salicylic acid and its compounds, the new antipyretics, antipyrin, antifebrin, thallin and phenacetin, are thoroughly considered, first as to their physiological action and then with regard to their therapeutic uses in the different types of fever. The collection of cases treated by these drugs constitutes a feature of the essay. In them are fully considered the untoward effects produced by each one of the antipyretics used, arranged in separate tables, together with an account of the age and sex of the patient, the time of onset and duration of the symptoms observed, and the particular febrile disease for which the drug has been employed.

The general conclusions arrived at by the author in his study are so terse and precise that we cannot abstain from quoting them. They are as follows: "From the reading of a large amount of literature on this subject, the writer thinks it may be stated that *antipyrin* stands to-day foremost in the ranks of the antipyretics, with *antifebrin* next, while *thallin* and *phenacetin* follow, with perhaps a preference for the latter. These conclusions are in regard to the reduction of fever. In pain the arrangement should be somewhat changed. *Antipyrin* still takes the lead, but *phenacetin* is quite as useful an analgesic as *antifebrin*, and seems more safe. *Thallin* possesses hardly any such a power.

"In rheumatism, of course, the salicylates act better than the rest of the class of antipyretics, particularly in reference to the pain and cure of the disease itself, but the others control the fever of rheumatism in a much more effective manner.

"As a general rule, marked depression and adynamia contraindicate the use of all antipyretic drugs, although exceptions to this rule, of course, occur.

"For widespread application, to be put in the hands of the inexperienced, to be efficacious and yet quite harmless, cold sponging is the antipyretic remedy *par excellence*; but even this must be used carefully and with intelligent ideas of its objects and results. The greatest enemies of antipyretic treatment are its friends, who, in their enthusiasm, often fail to use discretion and employ the measures to excess or without regard to the indications really at hand."

With a few exceptions the tracings appended as illustrations are excellent, and convey a fair idea of the action of the different drugs upon the circulation.

Such books as the present one are of service to the student, the scientific therapeutist and the general practitioner alike, for much can be found of real value in Dr. Hare's book, with the additional advantage that it is up to the latest researches upon the subject. We recommend it as a book of reference and as a ready guide to the student and busy practitioner. The book is printed on most excellent paper and is completed by a full and thorough index of its contents.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND J. HOWE ADAMS, M.D.

Prognosis of Albuminuria in Diabetes.

Schmitz (*Berliner klinische Wochenschrift*, April 13, 1891) has observed 1,200 cases of diabetes, 824 of which had albuminuria. Those cases which have been longest affected and which have used egg albumen to a great extent have the most albumin in the urine. Severe complications occurred as frequently in cases without albumin as in those with albumin. He concludes that albumin in diabetes is dietetic and not due to nephritis, and that it is in no sense a serious prognostic sign.

Inoculation of Tuberculosis, from Washing Clothes Containing Tubercular Sputum.

Dubreuille and Curché (*Archives de Medicine Experimental et d'Anatomie Pathologie*, 1890) report a case in which a nurse inoculated herself with tuberculosis by washing, over the flexed fingers, cloths containing fresh sputum of a tubercular patient. Two days after the death of the patient a small red swelling appeared over the phalangeal articulation of the third and fourth fingers. The swelling burst, giving exit to serous pus. Six days later, the axillary glands on the same side enlarged and suppurated. Nodules afterward formed on various parts of the affected arm, and consolidation occurred in the base of the right lung. A few tubercle bacilli were found in the pus and scrapings from the nodules. Guinea pigs were inoculated with the pus, and developed tuberculosis.

Action of Certain Aniline Colors on the Development and Virulence of Certain Microbes.

Eraud and Hugounenq (*Lyon Medical*, April 5, 1891) experimented with seven aniline colors. The only two that produced notable effects were methyl-blue and safranine. These seem to retard the development of the microbes. They appear to lessen their virulence without lessening their vitality if a dilute solution is used for a short time. If the solution is concentrated and used for a longer time, the vitality is also affected.

Inhalation of Chlorine Gas and the Hypodermic Use of Chloride of Gold and Sodium in Pulmonary Consumption.

Gibbes and Shurly (*Therapeutic Gazette*, April 15, 1891) relate twenty-seven cases where they have used the above methods in phthisis. All of the cases were far advanced, and with few exceptions were markedly improved. Chlorine gas was administered in two ways: First, the atmosphere of a small room, 500 cubic feet, was saturated with a spray of the solution of common salt and chlorine evolved in the room from six drachms of chlorinated lime by the addition of hydrochloric acid, the patient was then placed in the room; second, a mixture of U. S. chlorine water with twice its bulk of saturated solution of

common salt was administered to the patient from an atomizer. Solutions of iodine and of chloride of gold and sodium are made in glycerine and used hypodermically. The two solutions are used on alternate days, iodine in the beginning, dose of one-twelfth of a grain and the chlorides in one-thirtieth of a grain.

Conditions which Modify the Virulence of Tubercle Bacilli.

Ransome (*British Medical Journal*, April 14, 1890) details a few experiments which, so far as they go, lend weight to the assertion that light, pure air and porous soil cause tubercle bacilli to become less virulent. He selected two specimens of sputa which contained tubercle bacilli and exposed them in the following ways: The first specimen was over a dry soil, exposed freely to light and pure air; the second was placed in a dark room in the same neighborhood; the third specimen was placed in a small tenement house in Manchester and exposed to all the light that could be secured on the window-sill; a fourth specimen was exposed in a dark room of the same tenement; a fifth specimen was exposed in the ventilating shaft of the consumptive hospital. Animals were then inoculated with the sputum after it had been exposed five weeks. None of the specimens exposed to fresh air and light conveyed the disease. One of the specimens exposed in the same place, but in darkness, produced the disease. Of two specimens exposed in the tenement in the light, one produced the disease and one did not. Two specimens exposed in the dark room of the tenement, one caused the disease and one did not. The specimen from the shaft of consumptive hospital produced the disease.

Specific Weight of Blood in Disease.

Schmaltz (*Deutsche medicinische Wochenschrift*, April 16, 1891) made fifty-five observations on his own blood in the course of a year, at different hours, by means of a pyknometer of small dimensions, and found that its specific gravity was always about the same. He also examined ninety-five cases of disease, and arrives at the final conclusion that the specific weight of the blood under normal conditions varies to but a slight degree. In anemic conditions the specific weight is greatly lowered, and most in chlorosis and other blood diseases. The weight of the blood diminishes as it is poor in hemoglobin, and rises with the increase of that constituent. The number of the red corpuscles has but little effect upon the specific gravity. By the improvement of the anemic condition the weight of the blood rises and becomes normal with the return of health. By stasis of the blood in the extremities, he believes the specific weight is raised and may be found normal in spite of evident anemic condition.

Germain See's Treatment for Phthisis.

A report (*La Pratique Medicale*, April 21, 1891) of Germain See's new treatment for phthisis states that it consists in subjecting the patient to compressed air impregnated with creosote for from three to six hours a day. Its effects are: increase of appetite, digestive power, weight and strength, with lessening of fever, expectoration and cough. The general symptoms subside, and the disease seems limited to the local lesions.

Acute Miliary Tuberculosis and Tubercular Meningitis.

Reinhold (*Deutsche Archiv für klinische Medicine*, March 5, 1891) divides miliary tuberculosis into three forms: First, *typhus form*, where the disease appears as a general infection, the diseased condition of special organs being in the background; second, the *broncho-pulmonary form*, where the organs of respiration appear to be principally involved; third, the *meningitic form*, where the symptoms of inflammation of the pia overshadow disease in other organs. Necessarily there are border line cases in which it is difficult to judge of their proper grouping, and any given case of one form almost invariably has other organs involved with more or less thickly set miliary tubercles. The paper is based on the

observation of seventy-six cases—twelve of typhus fever, twelve of broncho-pulmonary and fifty-two of meningitic form. Of those of the typhus form, two were under 15 years old, six between 15 and 50, four over 50 years. Of the second group, one was under 15 years, four between 15 and 50, and seven 50 and over. Of the third group, twelve were under 15 years, thirty-eight between 15 and 50, and two 50 or over. *Post-mortems* were had in all the cases,

The difficulty of the diagnosis of cases of the *typhus form* from cases of typhoid fever is great and increases when the case comes under observation at a late period. They may also be confounded with septic diseases, such as malignant endocarditis. Headache, delirium, tremors, motor weakness, etc., are unreliable signs, as they are apt to occur in general fevers. Severe spasm of the neck muscles, painful muscles and severe pain in the neck and back may occur in typhoid and septic fevers without meningitis, but are relatively rare in cases of miliary tuberculosis without meningitis. Symptoms of meningitis are especially apt to occur in pneumonia of children without an actual meningitis.

Temperature.—Whenever there is great irregularity in the course of the fever without correspondence of other symptoms, it is in favor of tuberculosis and against typhoid. The disease usually begins similarly to typhoid fever, but in four cases it began suddenly with a chill. In some cases the course may be entirely afebrile, especially in tuberculosis of the serous membranes.

Pulse.—The diagnostic worth of the pulse is high as compared with the temperature, but in old persons this is sometimes worthless. An unusually great number of pulse beats, extending over a considerable period, and not affected markedly by the rise and fall of the temperature, is in favor of tuberculosis.

Respiration.—In the great number of instances respiration is parallel with the pulse, and may be fifty to sixty in the minute. These rapid respirations may occur without great overaction of the inspiratory muscles. It is of especial value when the lung lesions are slight. Tuberculosis of the diaphragm and its peritoneal covering accounts for some cases of irregular respiration with much oppression. Cheyne-Stokes' breathing was noticed three times without meningitis and was probably due to weak heart action and consequent deficient circulation in the medulla.

General appearance.—Patient is very pale in spite of high fever, and cyanotic without serious lung lesions. Slight œdema of the face without albuminuria may occur.

Skin.—A roseolous eruption has been observed, and the author thinks that a diagnosis of typhoid fever must not be made upon the appearance of a few isolated roseola, especially when they do not appear at the typical time. Petechia were not as common as in the septic fevers. Erythema nodosum may appear as the first sign of the disease.

Digestive apparatus.—Diarrhœa may occur without inflammation of the intestine, and hemorrhage independently of ulceration.

Spleen.—Splenic enlargement does not appear so soon nor to such a marked degree as in typhoid fever, and the failure of a noteworthy splenic enlargement after several weeks in doubtful cases is against typhoid and in favor of tuberculosis.

Urine.—Usually there is but slight albuminuria. Much albumin with blood and pus is one of the signs of tubercular nephritis. Anuria has occurred in children. Acute hemorrhagic nephritis was not observed.

Lungs.—The lung symptoms are slight. Pleuritic frictions from tubercles in the pleura may occur.

Broncho-pulmonary form is frequently mistaken for acute bronchitis, especially in young persons, but the severe depression, prolonged fever and marked failure of strength serve to distinguish it from this disease. Tubercle bacilli are not found in the sputum of patients with simple miliary tuberculosis of the lungs. Choroidal tubercles are rare, except in cases where there is great involvement of other organs. Retinal hemorrhages are also rare.

Meningitic form may be divided into very acute, which resembles cerebral apoplexy, and indicates involvement of the convexity, the subacute with involvement of the base of the brain, and the markedly chronic cases which resemble a psychosis with changing slight

paralyses, or if the lesion is exclusively on the base the symptoms may be those of tumor. The clinical symptoms are not always in accordance with what would be expected from the lesion found, as in one instance a man died with signs of disease of the convexity, and at the section a basal lesion only was found. The meningitic symptoms often mark massive disease in other organs. Meningitis has an inhibitory influence on both the pulse and temperature. The characteristic of the temperature course is its variability; this is due not so much to the inflammation of the pia itself as to the influence on the heat centres.

Respiration.—Dyspnœa with rapid breathing, so characteristic of lung tuberculosis, is not seen in meningitis, except in the last stage, as is Cheyne-Stokes' respiration.

Pulse.—In adults during the stage of pressure on the brain, there is a slowing of the pulse. In children, in the initial stage, the pulse is generally irregular and is sometimes slowed and may be looked upon as one of the first signs. About the time when the pulse changes its slow into rapid character it may change from 80 to 120 in a very short space of time. In two cases there were marked distention and pulsation of the carotids.

Skin.—*Tache cerebral* is only of use as a diagnostic sign when it is marked and in connection with unusual pallor of the skin, and under these conditions is against typhoid fever.

Pupil.—As a rule cuticle lesions cause narrowing of the pupil, and basal lesions cause widening. By moderate pressure on the brain narrow pupils are usually caused, and severe pressure causes wide and fixed pupils. As long as the pupils are subject to change they will contract and dilate with the condition of the sensorium; in apathetic patients the pupils are dilated. If the patient is aroused, the pupil will contract and will again dilate on a recurrence of the somnolence. In Cheyne-Stokes' respiration there is a dilatation of the pupil during the pause in respiration.

Basal Symptoms.—Paralysis of the eye muscles may be marked one day and scarcely seen the next. Hemiplegia was frequently found without adequate *post-mortem* lesions, the trouble being probably due to effusion in the venticles which has disappeared after death. In women, meningitis is often ushered in by a hysterical condition.

A Case of Aspergillar Tuberculosis of Curious Origin.

Potain (*L'Union Médicale*, March 28, 1891) reports a case which presented all the classical signs of pulmonary tuberculosis, including elastic fibres in the sputa, excepting the presence of the bacillus of Koch. Instead there was found aspergillus, which, on being inoculated in gelose, gave the characteristic vegetation. The patient had been employed in feeding pigeons by gavage with millet. The millet frequently contains aspergillus, producing a special disease in the pigeon in the mouth and viscera, a characteristic tumor appearing in the mouth, to which is given the name of chancre. The granulations produced differ anatomically in no way from tubercular granulations. Dieulafoy and others have inoculated animals with the product of these cultures, and have succeeded in developing the phenomena of tuberculosis. The patient probably received the disease by inhalations of fragments of the aspergillus. The prognosis Potain regards as less grave than ordinary tuberculosis, one case under his care recovering entirely. There is no especial treatment indicated. He classifies the disease as a pseudo-tuberculosis, similar to processes observed elsewhere. Some of these forms possibly are produced by modified forms of the bacillus of Koch.

Further Communication on the Use of the Acid Salt of Cantharidin in the Treatment of Tubercular Laryngitis.

Liebreich, in a communication to the Berlin Society of Medicine (*La Tribune Médicale*, March 12, 1891), reports the progress of his work in the use of cantharidin, the active principle of cantharides, in tubercular laryngitis. Regarding the tincture as unreliable, he uses the cantharidin in the form of the cantharidinate of potassium, beginning with injections of one-fiftieth of a milligramme, increasing the dose to six deci-milligrammes,

the average dose being one to two deci-milligrammes. The result of the injections of cantharidin is to produce an exudate of serum in pathological conditions; Liebreich attributes the good accomplished as due to the renewed activity in the cells due to the serum, also to the bactericidic properties of the exudate. Warned by the experience of Koch, Liebreich does not disclose the results obtained by his method, beyond stating that pre-existing nephritis is a counterindication to its use. Heymann, however, reports eleven cases of tubercular laryngitis, in which all the symptoms were ameliorated by the injections. Strangury, vesical tenesmus, hematuria and even slight albuminuria have been observed in some of the cases. Guttmann reports a case of trachoma in which absorption of the granulations was influenced very favorably by the injections.

The Treatment of the Pyrexia of Phthisis.

Williams (*British Medical Journal*, March 28, 1891) reaches these conclusions: (1) Pyrexia, due to tuberculariza tion, is best dealt with by derivative measures, such as counterirritation, salines producing secretion from other organs and assisting expectoration. (2) In pyrexia accompanying softening and excavation, measures to hasten these processes are most successful, combined with antiperiodics. (3) The use of remedies solely to reduce fever without promoting increase in natural secretion is inadvisable. (4) Our object should be to lower the temperature simply to the limits compatible with the comfort and well-being of the patient. Frequent feeding, rest in bed and stimulants are among these agents.

The Cure of Chyluria Depending on Filariæ in the Blood, by Thymol.

Lawrie (*Lancet*, Feb. 14, 1891) reports two cases of this condition cured by thymol. In the first case perineal section to remove a large white clot was necessary. Remedies were tried in vain until thymol was given in two-grain doses every four hours. This was followed by rapid improvement and finally by a cure in two months' time. The second case was given thymol in five-grain doses three times a day, being cured in six weeks. Lawrie regards this as a demonstration that thymol has the power of destroying organisms in the blood and tissues.

Vesicular Eruption in Scarlatina.

Curtis (*Albany Medical Annals*, Feb., 1891) reports a case of this description in a well-developed child of four years who had a well-marked case of scarlatina, including the characteristic eruption. On the fourth day of the fever a vesicular eruption appeared; many of these vesicles were of the size of a split pea, with semi-purulent contents. They developed without the recurrence of fever and disappeared in a few days. The child made a good recovery, not having been severely ill. The author explains the occurrence of the phenomena by the fact that the eruption of scarlatina is a dermatitis; where the engorgement of the cutaneous vessels is very great, the capillary loops running to the papillæ are still more engorged. This produces the numerous pinhead-size, reddish spots ordinarily observed. The vesicles are a continuation of this process, the serum and some of the formed elements escaping into the cellular tissue.

A Contribution to the Etiology and Knowledge of Purpura Hemorrhagica (Morbus Maculosus Werlhofi), with Therapeutic Remarks.

Letzerich (*Zeitschrift für klinische Medicin*, 1891, 18th Band, 5th and 6th Heft) insists on absolute rest, the application of cold and the internal administration of styptic medicine for the bleeding in this disease. If this does not suffice, the application of a five per cent. solution of antipyrin with its inhalation and internal administration is recommended. Later, preparations of iron are useful; benzoate of soda as an antimycotic, warm baths and enveloping by the Priessnitz method, and the giving of rich nourishing food are

indicated. The author has obtained pure culture of the bacillus purpura with which he has produced the disease in rabbits. Studying the bacillus by Koch's method he thinks the bacillus has a resemblance to the bacillus of anthrax and of syphilis. He recognizes the acute or subacute and chronic forms of the disease. Increase and subsequent decrease in the size of the liver and spleen were noticed, according exactly with the progress of the disease. The author believes that the lodgment of the micro-organisms in the liver capillaries causes the rapid spread of the disease.

The Blood and Nutrition in Normal Hysteria.

Gilles de la Tourette and Cathelineau (*Le Progrès Médical*, Feb. 14, 1891) give a detailed report of their researches in hysteria, in the course of their general investigation of the condition of the nutrition in hysteria. They reach the following conclusions: (1) In cases of normal hysteria, the same solution of the continuity of the skin as in sound individuals gives issue only to a quantity of blood about one-third inferior to the normal. (2) That except in cases of anæmia and chlorosis, the quantities of hemoglobin, urea and glycogen are in normal proportions. These results confirm what these authors have noted before, that the nutrition does not seem to be disturbed in normal hysteria.

The Practical Details of the Method of Injections of Serum of the Dog and Goat in Tuberculosis.

The principle is announced by Professor Richet (*L'Union Médicale*, March 28, 1891) that to render an animal or patient refractory to tuberculosis there should be injected the blood of an animal insusceptible to tuberculosis. He selects, for this purpose, the dog and goat; but these animals can acquire tuberculosis, although the occurrence is very rare. The method employed by Professor Richet eliminates all possible accidents. The animal is drained of blood, and a complete autopsy is made of all its organs to ascertain their condition. If they are found perfectly healthy, the blood is then injected in the patient. In this way all danger is supposed to be removed, excepting possibly the increased tendency to the acquisition of hydrophobia. It is impossible to state whether this risk actually exists; if it does, it is regarded as infinitesimal. The results are not published, not yet being complete. They will be ready for the Congress on Tuberculosis, which meets in July, 1891. The results so far have been encouraging. No accidents have followed the injections, except, possibly, an occasional urticaria or herpes.

Two Cases of Remarkable Paroxysmal Tachycardia.

Perrin (*L'Union Médicale*, March 19, 1891) reports two cases of paroxysmal tachycardia, in both of which all organs were normal apparently. A man of 58 experienced, without appreciable cause, sudden attacks of rapid, tumultuous, irregular pulsations of the heart. These cardiac crises lasted for hours or days, and disappeared as suddenly as they came. The other case, a woman, had similar attacks, one of which was so severe that all the symptoms of the last stage of valvular alteration appeared, especially of the right heart; general œdema, pulmonary congestion, double pleuritic effusion and suppression of urine. Suddenly she was seized with diuresis; in four days the serous effusion disappeared, and the heart and pulse became normal.

The Treatment of Influenza-Neuralgia with Sweatbaths.

Frey (*Deutsche medicinische Wochenschrift*, March 19, 1891) reports his experience with the use of this agent in the neuralgia accompanying influenza. Using simply the steam or hot air bath, he found the best results in the ordinary typical forms of neuralgia. The more recent the case the better were the results. In other forms of neuralgia he was less successful. Believing that influenza is due to a specific micro-organism, he questions

whether the neuralgia occurring with it may not be occasionally in the nature of an infectious neuritis. In all these cases the ordinary drugs used against this form of trouble had been used without avail. He thinks there is a strong analogy between malarial and influenza neuralgia.

SURGERY.

UNDER THE CHARGE OF

D. HAYES AGNEW, M.D., LL.D., AND J. WILLIAM WHITE, M.D.

ASSISTED BY

G. G. DAVIS, M.D., M.R.C.S., AND THOMAS R. NEILSON, M.D.

Transplantation of Tissue From Lower Animals to Man.

A. M. Phelps (*New England Medical Monthly*, April, 1891) describes two cases in which grafting of large pieces of bone was tried. In the first case, owing to a lack of division of the biceps muscle and inefficient methods of securing the dog used, the graft became displaced and was removed. The other case was of a boy with an ununited fracture of the lower third of the leg. A small dog was placed in a sitting posture and lightly encased in absorbent cotton and plaster bandage. Its right elbow was resected and an inch of the ulna containing the nutrient artery was inserted in the defect in the patient's tibia. The muscle of the dog was stitched to that of the patient, and the skin of the two united with a ring of sutures. On the sixth day the wound had healed without a drop of pus. On the eleventh day, on account of movements of the dog, the bond of union was divided. In five weeks the graft showed no further signs of uniting and was removed. The temperature and pulse of the boy rose and those of the dog fell until an equilibrium was attained. The bone graft was found to be irregularly covered with new bone. The operation was a success in so far as it shows the possibility of growing large masses of tissue from an animal to man and of establishing the circulation until union has taken place between the opposite species. It also demonstrates that a growth of new bone takes place. If actual contact could have been longer maintained, bony union would have occurred. The graft has excited a reparative process, and the fracture promises to unite.

Implantation of Decalcified Bone.

Kümmell (*Deutsche medicinische Wochenschrift*, March 12, 1891) gives his results in osteoplastic operations of the use of decalcified beef bones. The bone is to be freed of its periosteum and marrow, and decalcified in a ten to fifty per cent. hydrochloric acid solution. It is then washed with water and sublimate solution and preserved in iodoform-ether. According to the object desired, the bone is either decalcified entirely or a small amount of calcareous matter is allowed to remain to stiffen the piece. There are three indications for the use of decalcified bone: (1) where there are defects to be filled in such as occur from necrosis, injuries to the skull, etc.; (2) in pseudarthroses; (3) the replacing of small diseased bones. As larger pieces of bone were used the results improved. A great advantage of the method is that, notwithstanding suppuration, the piece may nevertheless become attached. Some cases are then described. A decalcified piece, 4 cent. long and one broad, healed firmly in a defect in the ulna after remaining loose 14 days. Another case of tubercular disease of the calcaneum was filled with seven pieces, five of which healed in. A patient with abscess of the head of the tibia had the cavity filled with prismatic pieces of decalified bone, and primary healing occurred. In resection of the knee the bones are joined by decalcified pins with a hardened centre. To close trephining wounds he has used a single piece of bone covered with the periosteum and skin with good results. A child with spina-bifida had a piece one and a half centimetre long and one wide inserted in the defect. It healed and closed the opening

soundly. In cases where one cannot hope to thoroughly disinfect the wound, it is better to wait until by tamponing with iodoform gauze healthy granulation has occurred, and then implant the bone. Good results in the replacement of carpal and metacarpal bones were obtained.

Treatment of Syphilis of the Pharynx and Nose.

Ohmann-Dumesnil (*Courier of Medicine*, March, 1891) advocates the local application of mercurials by means of sprays to the nose and pharnyx. He employs the hand atomizer and uses the mercurial in combination with alboline or water. His formula for the former is oleate of mercury (5 per cent.), one drachm, alboline two ounces; and for the latter, bichloride of mercury, one grain; muriate of ammonia, six grains; distilled water, two ounces.

Successful Resection of Tuberculous Small Intestine.

Frank (*Präger medicinische Wochenschrift*, No. 23, and *British Medical Journal*, May 2, 1891) resected the small intestine of a woman, aged 26, for tubercular disease. She had consolidation of one lung at its apex, leucorrhœa, pain, nausea and diarrhœa. Tuberous projections were found on the ileum a hand's breadth above the ileo-cæcal valve and some seven inches higher. Twenty-nine and a half inches were removed, including a mass of caseous lymphatics. Gussenbauer's clamps and Lembert's sutures were employed. Ten months later the patient was in excellent health. Only five previous cases of resection of the intestine for tuberculosis have been recorded.

Eruptions Appearing Under Plaster Dressings.

Geo. T. Elliot (*New York Medical Journal*, April 11, 1891) discusses the eruptions appearing under plaster-of-Paris dressings. Of eighteen cases fifteen were eczemas, two were favus and one tinea circinata. Sometimes, but not always, these affections were characterized by itching. The eruption was strictly limited to the covered surface. Three varieties of eczema are described, which differ mainly in degree. Internal disturbances are regarded as having very little to do with their causation. He considers them as not being due to local irritation, but rather to certain parasitic germs which, prospering under the favorable conditions in which they were placed, penetrated the skin and by their irritation provoked the eruption. When the eczema has been cured, and cleansing and proper care been exercised, there has been no return of the trouble. Drying powders are recommended and later ichthyol in five to ten per cent. watery solution. Resorcin was not found so good; to remove any thickening of the skin, tarry preparations were used.

Imperforate Anus Existing for Fifty-six Days.

Wm. Hailes, Jr. (*Albany Medical Annals*, March, 1891) reports a case in which the rectum ended in a *cul-de-sac* three-quarters of an inch from the anus. Operation was only consented to at the end of eight weeks. The abdomen was immensely distended. A trocar, three-sixteenths of an inch in diameter, thrust upward and slightly to the left, allowed a free discharge of liquid forces. After stretching several times and once thoroughly divulsing, the opening remained patulous. Mr. Harrison of Lumford, Eng., reports a case operated on successfully thirty-three days after birth; this one was fifty-six days.

The Treatment of Deformities Following Infantile Paralysis.

De Forest Willard (*American Journal of the Medical Sciences*, May, 1891) has an interesting and well-illustrated paper on this subject. The following are his conclusions: (1) Even the severe resultant deformities of infantile paralysis are capable of being benefited by sur-

gical measures and mechanical appliances. No case with fairly strong upper extremities should be considered helpless. (2) These deformities can be largely prevented by the early use of some form of apparatus. (3) Surgical measures in long-standing cases should usually precede mechanical appliances; pain and time are saved and the results just as good. (4) The surgical measures to be employed are tenotomy, myotomy, division of the fascia, application of force and resection. Osteotomy and resection are sometimes necessary. (5) Mechanical appliances should be used to retain the limb in proper position, but they should not interfere with the circulation of the member. Crooked limbs can often be straightened so as to be made a part of the apparatus, and the muscles of these limbs should be compelled to do their full extent of work in supporting the body. The apparatus must frequently be made to support a large portion of the weight of the body, the helpless, flail-like limbs being accessories. (6) No case should be abandoned without the most careful and repeated attempts at rectification, as even feeble locomotion will in time become greatly improved by walking, and the health and happiness of the individual will thereby be greatly increased.

Supra-pubic Lithotomy in Children.

Alexandrow (*Archiv für klinische Chirurgie*, Bd. 41) advocates the high operation for children. Its main advantage is that the bladder can be sutured, and thus primary healing obtained. Out of twenty-six cases of his own, no deaths occurred. The bladder is to be washed out with sublimate solution one or two parts to 3000. Then 150 to 200 grms. three per cent. boracic solution is injected. Tamponing of the rectum is not necessary. An incision four centimetres long is made upward from the symphysis pubis, the muscles and fascia cut between two forceps and the prevesical connective tissue divided and pushed aside with the scalpel handle. The wound is kept open with retractors and the peritoneum held upward with a blunt hook. The bladder being fixed by two silk sutures is then opened and washed out with sublimate solution and the wound sewed. The stitches go down to the submucosa, and five are used for an incision, two and five-tenths centimetres long. A soft catheter is left in the urethra and removed in from one to three days. Drainage of the prevesical space is deemed unnecessary.

Catgut Infection in the Dry Treatment of Wounds.

P. Klemm (*Archiv für klinische Chirurgie*, Bd. 41) has noticed about the eighth or tenth day an increase in the temperature, with redness and swelling in the vicinity of the wound. Examination revealed pus in its interior. This was not in the track of the superficial silk sutures but of the deep catgut (terrace) ones. Cultures with similar catgut demonstrated its freedom from germs. Careful consideration of the subject led to the conclusion that catgut, like a moist blood-clot, acts as a very favorable nidus for the growth of suppurative germs. The infection undoubtedly came from without at the time of the operation. As silk does not afford the same favorable nidus as does catgut there is more probability of a wound remaining sterile when the former is used than when the latter. This was demonstrated in a series of experiments, here detailed, in which two wounds were made under the same conditions in the same animal. In one, aseptic silk was placed, and in the other aseptic catgut; the former pursued the more favorable course. The author concludes that, while catgut can be sterilized, its use is not to be encouraged in surgery on account of the aid it gives to the development of suppuration in wounds not absolutely aseptic.

Extirpation of the Larynx, with Analysis of 163 Cases.

Tauber (*Langenbeck's Archiv*, No. 41) gives a critical review of the results of this operation, and an elaborate table of 163 cases. Of these 113 were males and 31 females. In 19 the sex was unknown. The larger number of cases occurred between the ages of 40 and 60 years. Designating the soft malignant growths as carcinomata and the hard ones as epitheliomata, we find that there were 110 cases of carcinoma, with 68 deaths, or 61.8 per cent.

Epithelioma, 35 cases, 19 deaths, equals 54.2 per cent.; sarcomas, 8 cases, 2 deaths; syphiloma, 2 cases, 1 death; tuberculosis, 2 cases, both fatal; adenoma, 2 cases, 1 fatal; papilloma 2 cases, both recoveries; lupus, one case, recovered; and necrosis of larynx one case, fatal. The results may be divided into four groups. (1) Those deaths associated directly with the operation. Of these there were 67, or 41.1 per cent. (2) Favorable cases, or those that lived three years without return. Of these there were 13, or 7.9 per cent. (3) Those in which the operation was recovered from, but in which the disease returned within a year. Of these there were 47, or 28.8 per cent. (4) Those in which recovery from the operation ensued, but in which sufficient time has not elapsed to place them in the second group. These were 32 in number, or 19.6 per cent. In four cases the result was not given. Adding the first and third groups together, we have a mortality of 69.9 per cent., while of cures we have 7.9 per cent. The death-rate does not decrease with increased experience, as was the case with ovariotomy. Various authors give the following mortality of the operation; Scheier, 67 cases, with 43 per cent.; Jacobson, 71 cases, and 41 per cent.: Maydl, 92 cases, and 40 per cent.; Salomi, 104 cases, and 43.6 per cent.; Baraloux, 106 cases, and 52.8 per cent.; Krajewski and Wroblewski, 127 cases, and 44.9 per cent.; Tauber, 163 cases, and 41.1 per cent.—an average rate of 43.6 per cent. [In view of these statistics, I believe that tracheotomy will be just as useful as a palliative measure as laryngectomy, and to my mind this latter belongs to that class of daring operative procedures of which the learned and fearless Strohmeyer has said, "Humanity loses nothing by their remaining unperformed, and they add nothing to the fair name of surgery."—G. G. D.]

The Results of Excision of the Syphilitic Chancre.

A paper by Jullien (*L'Union Médicale*, March 5, 1891) sets forth his experience and views in regard to the excision of the chancre, which he has had occasion to do eighteen times in ten years.

In speaking of the technique of the operation, he says that it should be done "surgically," with just as much care as would be exercised in the removal of a cancer. He elevates the chancre with a tenaculum and cuts beneath it with a bistoury, in preference to the scissors, and by palpation of the borders of the wound makes sure that the whole of the indurated area has been taken away. He closes the wound with sutures, and dresses it with an antiseptic. For anæsthesia, he employs cocaine either topically or by injection.

In giving the results of his cases, he excludes three of them for the reason that they were lost sight of shortly after the excision was done, reducing the number in which the effect could be watched to fifteen. In the first of these the chancre was excised nineteen days after its appearance. After more than a year's observation of this patient no constitutional manifestations were noted, and he married later and became the father of healthy children. In the second instance the sore had existed twenty-eight days when removed; no eruption appeared, nor any other symptom except a suspicious enlargement of the tonsils, which developed at the end of 103 days. This patient also married, and is the father of perfectly healthy children. In the third case, induration developed in the cicatrix of the excision, but up to the eighth month no cutaneous manifestation made its appearance. In the fourth the sore was excised five days after it was first noticed. About the twenty-ninth day, four or five red spots were seen on the skin, but these were not considered as certainly specific. In the seventeenth month this patient contracted a new infection, and several weeks later had marked roseola and ganglionic enlargements. Jullien thinks that the excision of the first chancre rendered that infection transitory.

Six of the remaining eleven patients were benefited by the excision to the extent that the disease was attenuated to a considerable extent, the secondary manifestations having been very slight. In the other five, the excision had no effect whatever upon the course of the disease.

Jullien concludes that the excision of the initial sclerosis is not always a useless operation, and that it is legitimate to propose it when the chancre has existed only a few days, and when the ganglia are free from all specific influence. He insists that with the sore a

large zone around its circumference should be removed, and that even if the loss of substance be great it never causes the patient as much anxiety as does the smallest chancre in the course of development. Cases which are not suited to the operation are those in which, owing to the seat of the lesion, there would result a deformity or an embarrassment of function.

He believes that the doctrine, according to which, the chancre having been recognized, the physician has only to fold his arms and await the course of infection and the general contamination of the system, has had its day, and that, the disease once established, treatment ought to be adopted to prevent or to combat it at least; that excision is the most complete means which we have at hand, and is adapted to a very small number of well-chosen cases early met with.

A Hundred Cases of Entire Excision of the Tongue.

A valuable paper by Whitehead on excision of the tongue appears in the *British Medical Journal* for May 2, 1891.

In the last twenty years the writer has operated for cancer of the tongue in 139 cases. Of these 104 were complete excisions, and 25 were partial operations, the mortality in the former being 19.21 per cent., while in the total number of cases it was 14.3 per cent. When the tongue alone was excised the death-rate was 4.5 per cent., and when glands and jaw were also removed it was 77 and 57 per cent. respectively.

He has not selected his cases, and has never allowed the extent of the disease or the emaciated condition of the patient to deter him from operating when there was any prospect of either prolonging life, or of affording even but temporary relief.

The essential details of Whitehead's operation are: (1) That complete anæsthesia during the first stage of the operation, but afterward only partial insensibility, is to be maintained. (2) The mouth must be securely gagged, and kept fully open. (3) The head should be supported in such a position as will afford the best light, and at the same time favor the gravitation of blood out of the mouth rather than into the pharynx. (4) A firm ligature must be passed through the tip of the tongue for the purpose of traction. (5) The division of the reflection of mucous membrane between the tongue and jaw and the anterior pillars of the fauces. (6) Rapid separation of the anterior portion of the tongue from the floor of the mouth. (7) Securing, if possible, the lingual arteries prior to division. (8) Passing a ligature through the glosso-epiglottidean fold, before finally separating the tongue. (9) The application of a mercurial solution to the floor of the mouth, followed by painting the surface with an iodoform styptic varnish. The cutting part of the operation is done entirely with scissors.

The writer does not advocate preliminary tracheotomy, and believes that it is possible to guard against the entrance of blood into the lungs by means involving much less risk than either tracheotomy or laryngotomy. He thinks it important that the patients should be made to sit up from the first and not kept in bed. The average time of convalescence he has found, under these circumstances, to be seven days.

In regard to the predisposing and exciting causes of the disease, it was found that in 104 cases a family history of cancer could be definitely traced in but six, and in seven others it was doubtful. In sixteen instances the disease was attributed to injury; 61 of the patients were smokers, and in the majority of these the disease began on the side on which the pipe was habitually held. Irritation from teeth was the exciting cause in 33. One patient had never smoked, and had not possessed a tooth for twenty years.

As to the duration of life after the operation, information was obtained in 61 cases. Fifteen lived for one year; four two years; two three years; four five years; one six years, and one patient survived the operation for fourteen years, although 62 years old at the time it was performed.

In conclusion, Whitehead lays great stress on the importance of the removal of the disease at the earliest possible moment after its discovery.

Wry-Neck: Its Varieties and Their Treatment.

Annandale (*Edinburgh Medical Journal*, April, 1891) makes the following division of the varieties of this deformity: (1) Simple. (2) Spasmodic (temporary). (3) Spasmodic (persistent). (4) Complicated.

The first results from the contraction of one sterno-mastoid muscle, or only its tendinous portion. It may be congenital, due to injury during birth, to accident or surgical operation, to paralysis or weakening of the muscle of one side, or may come from the bad habit of holding the head and neck to one side, as in glandular and other painful affections. Its treatment consists in the use of electricity, massage and counterirritation, and attention to the general health, or, if these means fail, division of the contracted muscle.

In the second variety—the temporary spasmodic—the contraction of the sterno-mastoid is not constant, and other muscles of the neck may be similarly affected. The condition arises from some temporary derangement of the general nervous system, or some local nerve or muscular irritation, and its treatment requires attention to the general nervous system, the removal of any cause of irritation, if it can be discovered, and properly applied massage.

The persistent spasmodic variety, he says, may depend upon a more or less continuous spasmodic contraction of one sterno-mastoid, but not infrequently other muscles are also affected. It may result from the more temporary cases, or from some special nerve irritation, but the most frequent cause he has found to be constant and long-continued movement of the head to one side, such as are required in certain occupations. The treatment necessary consists in the division of the spinal accessory nerve, or the excision of a small portion of it, and when the posterior cervical muscles are also affected, similar treatment of the posterior branches of the upper cervical nerves, as recommended by Noble Smith and Keen.

In the fourth kind—the complicated—there will be found (*a*) disease of the cervical vertebræ, (*b*) cicatricial contraction from wounds, ulcerations, or other conditions causing destruction of tissue, (*c*) enlarged glands or morbid growths, or other diseased condition in the neck. The treatment, if the particular condition does not prevent the cure of the deformity, consists in removing the complicating cause, and afterward the employment of manipulative or operative means to overcome any remaining distortion.

Surgical Penetration into the Posterior Mediastinum.

In order to open the posterior mediastinum, Quénu and Hartmann (*Bulletin et Memoirs de la Societè de Chirurgie de Paris*, Tome XVII., Nos. 1 and 2, 1891) advise a vertical incision 15 centimetres long over the angles of the ribs, between the spinal border of the scapula and the vertebral column, about four fingers' breadth from the spine, the middle of the incision corresponding to the spine of the scapula, or to a point a little below it. On reaching the trapezius, it is possible, by retracting its inferior border upward and inward, to avoid sacrificing more than a few of its fibres. It is not necessary to interfere with the deeper muscles. The ribs are then denuded and resected for the extent of about two centimetres. This small resection of three ribs suffices to permit the hand to penetrate entirely into the posterior mediastinum by stripping off the pleura. The opening made in the thoracic wall extends from the inferior border of the second rib to the superior border of the sixth, a distance of from 10 to 12 centimetres. By retraction of the ribs it is possible to see and to explore the hilum of the lung, the aorta, and that portion of the œsophagus which extends from the root of the bronchi to the diaphragm.

If the pleura, instead of being stripped off, is incised, the upper lobe of the lung and even the summit of thoracic cavity are easily accessible, much more so than by resection of the ribs below the clavicle.

The experience of the writers has taught them that it is better to approach the posterior mediastinum, and especially the œsophagus, from the left side than the right, on account of the anatomical arrangement of the pleura.

They say that while they scarcely know what may be the practical application of their researches, they appear to open the way, on *a priori* grounds, for surgical intervention in cases of lesions of the vertebral bodies, of abscesses of the mediastinum, and of compression of the œsophagus or bronchi by certain ganglionic tumors. Especially do they show the possibility of reaching the œsophagus for the treatment of certain affections, particularly for the removal of foreign bodies which cannot be removed by the natural passages. The method of propulsion advised under these circumstances has been shown to be far from harmless, Martin having met with eight fatal cases in twenty-two observations; and they would give the preference to intra-thoracic œsophagotomy over Richardson's operation, which consists in opening the stomach and inserting a finger or the hand to guide the instruments of extraction. In regard to the operative treatment of cancer of the œsophagus, they do not expect that opening of the posterior mediastinum will be of much avail.

The Operative Treatment of Rectal Cancer, with Especial Reference to Kraske's Sacral Method.

Thorndike (*Boston Medical and Surgical Journal*, May 7, 1891) discusses the operative treatment of cancer of the rectum, beginning with Lisfranc's operation, described in 1830, consisting of resection or excision of the bowel from below, and of which some more modern operations are but modifications.

Kraske, in 1885, described an operation entirely different from that of Lisfranc, the idea being to devise a plan of procedure by which a better view of the structures to be operated upon, and more space to work in, could be gained, and thus a more complete extirpation of the disease made possible, and a larger number of cases brought within the sphere of operation. The operation is performed with the patient lying upon the right side, and consists in making a median incision from the middle of the sacrum nearly to the anus; dissecting up the soft parts to the left, as far as the margin of the sacrum; enucleation of the coccyx; division of the left greater and lesser sacro-sciatic ligaments, and excision of the portion of the sacrum surrounding the fourth foramen. The gut is then carefully freed from its lateral attachments and from the prostate and bladder, or the vagina, anteriorly, a plug of gauze having first been inserted into the anal portion. An elastic ligature is passed around the bowel, and tied well above the upper limit of disease, and the excision made. The details at this step will vary according to the extent of the disease upward and the involvement or freedom of the anal end from the growth. If the latter is not involved and does not have to be removed, the operation is a resection, and the two ends of the bowel are to be brought together and stitched. If the anal portion must be removed, the gut is to be sutured to the sacral wound, and an artificial anus established.

Old Traumatic Dislocations of the Shoulder Treated by Excision of the Head of the Humerus.

Dwyer (*New York Medical Journal*, March 28, 1891) reports a case of infra-coracoid dislocation of the right shoulder of upward of two months' standing, for the relief of which, ten days after an unsuccessful attempt at reduction had been made, he performed excision. The joint was painful, and the movements of the arm were much restricted.

Seven weeks after the operation, on removing a plaster dressing which had been applied, it was found that there was but little voluntary motion, and that passive motion was also limited, and gave rise to much pain. After three months' use of passive motion and electricity, the patient was free from pain, had a good deal of motion at the shoulder, and was able to use the hand and arm in many of her household duties.

From the literature of the subject, Dwyer has collected twenty-six other cases reported by various operators, from the year 1857 to 1890 inclusive. The results in these cases were marked improvement in fourteen, the arm in most of them being almost as useful as before the injury; two were moderately improved, one slightly, one not at all, and in two the results are unknown. Five died—one from hemorrhage, one from secondary hemorrhage,

one from gangrene following ligation of the axillary artery, and two from pyæmia. Three of these, which happened before the days of antiseptic surgery, would not, he thinks, occur at the present day in the hands of competent surgeons, while two might happen to any of us, having been the result of accident during the operation.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D.,

ASSISTED BY

DAVID CERNA, M.D., PH.D., AND THOMPSON S. WESTCOTT, M.D.

Ichthyol in the Treatment of Dyspepsia.

Stocquart (*Archives de Médicine et de Chirurgie pratiques de Bruxelles*, 12th fasc., 1890) speaks highly of the value of ichthyol internally in the treatment of dyspepsia. He prescribes it in solution, and has never found it to disagree with the stomach: on the contrary, it stimulates the appetite and relieves the vertigo, flashes of heat and vague pains which frequently accompany gastro-intestinal dyspepsia. Five to fifteen grains of ichthyol or sulpho-ichthyolate of soda are given in the twenty-four hours.

Mercury as a Specific in Typhoid Fever; Conclusions from the Study of 700 Cases.

From a clinical experience embracing nearly 700 cases of typhoid fever, Smakovsky (*L'Union Médicale*, April 10, 1891) concludes that the simplest and most efficacious treatment consists in the administration of calomel in fractional doses, according to the method of Professor Zachariine, of Moscow. Three-fourths of a grain of calomel is given every hour for ten doses, if necessary, or till copious, soft, greenish stools have been secured, a gargle of chlorate of potash being meanwhile used to prevent stomatitis. In cases in which cardiac weakness already exists, an infusion of digitalis is used before the calomel. If instituted in the course of the first seven days of the fever, this treatment is said to abort the disease, even when grave in type. If this result is not obtained, the drug exercises the most favorable action in shortening the duration of the disease and preventing complications. A second course of calomel may be given a day's interval after the first, the abortive action being produced sometimes only after this second administration. During the interval and subsequently, if the disease is not aborted, the author prescribes:

℞ Subnitrate of bismuth . . . . . 2½ grains.
Pure naphthaline . . . . . $\frac{3}{10}$ grain.
Sulphate of quinine . . . . . 1½ grains.
S. One powder. Four of these daily.

The author is convinced that the mortality should be *nil* in all cases where the treatment is commenced before the tenth day of the disease, excepting in the very old or where it occurs in the course of another grave malady.

Treatment of the Dyspepsia of Children with Lactic Acid.

Lesage (*Revue de Thérapeutique Médico-Chirurgicale*, April 1, 1891) employs lactic acid in the treatment of simple dyspepsia as well as that associated with "spinach" stools.

His formula is:

℞ Lactic acid . . . . . 30 grains.
Simple syrup . . . . . 3½ drachms.
Water . . . . . 2¾ ounces.

If there is simply a dyspeptic condition without immediate danger, this mixture can be prescribed in doses of a coffeespoonful five or six times a day; in graver cases it must be given more frequently. To prevent relapse, it is necessary to continue this treatment for several days after active symptoms have subsided.

Phenidin the New Analgesic.

Under the name of "phenidin," Depasse (*Centralblatt für die gesammte Therapie*, April, 1891, from *Journal de Médicine de Paris*, 1890) speaks of the therapeutics of para-acetphenetidin, which is closely allied to the more widely known phenacetin. While insoluble, it may be administered suspended in a little sweetened water. He believes it to be equal to or superior to antipyrin as an analgesic. The dose is fifteen grains given hourly for four doses. It has been used with success in sciatica, lumbago, migraine, and even in the pains of metritis and perimetritis.

The Therapeutics of Kava-Kava.

In continuation of his study of Kava-Kava, already noticed (see University Medical Magazine, March, 1891), Cerna (*Medical and Surgical Reporter*, May 2, 1891), has published a report of forty-one cases treated by this agent. Most of these illustrate the favorable action of the drug upon the mucous membrane of the genito-urinary tract; thirty-three cases, embracing acute and chronic cystitis, gonorrhœa, gleet, vaginitis, retention and incontinence of urine and dropsy, are reported cured, while the remaining eight were markedly relieved.

Massage of the Stomach in the Treatment of Gastric Dyspepsia.

Cseri (*Revue de Thérapeutique*, April 15, 1891) employs massage in the treatment of gastric dyspepsia. Two or three hours after a full meal, the patient is placed in the dorsal decubitus, with thighs flexed on the pelvis and the mouth open. The gastric region is first very lightly stroked, the force then being gradually increased to a veritable kneading, always in a direction toward the pylorus. The whole process should last about ten minutes. This massage not only hastens the passage of food into the duodenum, removing at the same time the badly digested and altered remains of previous meals, but also stimulates the contractility of the muscular coat of the viscus and increases the secretion of gastric juice. A short massage of the large intestine should end the séance. The only contraindication is the existence of complications, such as ulcer or other conditions which may cause hemorrhage. This treatment is said to be followed by a pleasant sense of relief and often by refreshing sleep.

A Lotion for the Alopecia following Acute Diseases.

The following formula is given (*L'Union Médicale*, April 23, 1891) as a preventive of the alopecia which is observed during convalescence from grave acute diseases:

℞. Alcohol, 80 per cent. . . . . 2½ ounces.
Camphorated alcohol . . . . . 1¼ drachms.
Rum . . . . . 1¼ drachms.
Tincture of cantharides . . . . . 1¼ drachms.
Glycerine . . . . . 1¼ drachms.
Essences of sandalwood, wintergreen and roses . . of each 5 drops.
Muriate of pilocarpine . . . . . 7½ grains.

If the hair becomes dry, inunctions of oil of sweet almonds or castor oil may be made from time to time.

Treatment of Nocturnal Incontinence of Urine by Electrization of the Urethral Sphincter.

Ollivier (*L'Union Médicale*, April 21, 1891) proposes electrization of the urethral sphincter for the relief of this annoying infirmity of childhood. He introduces into the urethra a small metallic sound *à boule*, insulated except at its tip by a rubber covering, and passes it into the bladder, withdrawing it till the exposed extremity reaches the proper point. One pole of the battery is now connected with the sound, while the other is applied to the pubes or the perineum. A feeble current is first employed. Twelve to fifteen séances as a rule are needed to effect a cure. In case of failure, he naïvely recommends recourse to the usual method of treatment by belladonna or strychnia.

The Action of Methacetin, the New Antipyretic Drug.

Kapper (*Wiener medizinische Wochenschrift*, No. 15, 1891) details his experience with this drug, and is quite in accord with the observations of Mahnert and the more recent conclusions of Seidler, that this agent does not exercise a destructive action upon the blood. In his own experiments, which embraced cases of acute rheumatism, pneumonia, typhoid fever, tuberculosis and septicæmia, in doses of three to four and a half grains, methacetin caused a rapid fall of temperature varying from $3\frac{3}{5}$ to $7\frac{1}{5}$° F., attended often with chilly sensations. At the same time was noted a reduction in the pulse frequency, with increase in the force of the heart and in the pulse-wave. Sweating was the only disagreeable symptom, and in tubercular cases especially the drug seemed to aggravate the night-sweats for several days after its exhibition. No other bad effects were noted, even after doses as large as thirty grains. The author highly commends this remedy in acute and chronic rheumatism, and as a safe antipyretic; but as an antineuralgic he does not consider it superior to antipyrin or antifebrin.

A Study of the Action of Cocaine on the Circulation.

Under this title Reichert (*American Lancet*, May, 1891) presents a carefully elaborated article, from which the following conclusions, among others, are drawn:

(1) The minimal fatal dose, when injected intravenously in divided doses (one per cent. solution), varies from 0.004 to 0.03 gramme to the kilo. of body-weight, depending upon the susceptibility of different dogs.

(2) After repeated injection of very small doses (0.001 gramme to the kilo. of body-weight) the pulse-rate is first decreased, then increased, and finally decreased. A single very small dose causes a decrease; a small to a moderate dose, an increase; very large doses, a more or less permanent decrease. The first effect is due to a stimulation of the cardio-inhibitory centres; the secondary increase to a depression of the same, which may be assisted by a similar action on the cardio-inhibitory peripheries; the final decrease to a depression either of the accelerator or automatic motor-ganglia in the heart.

(3) The cardio-inhibitory centres are primarily stimulated, secondarily depressed; but the action on the peripheries is very inconstant.

(4) Pressure is always increased, unless after large doses, when it may temporarily be diminished, followed by a rise above normal, or, after very large doses, be permanently lowered. The increase may be decided long after the development of the third stage of the action on the heart. The increase is chiefly due to a stimulation of the vaso-motor centres in the medulla, to a slight direct stimulation of the vessel walls and to the acceleration of the pulse. The final fall is chiefly dependent upon a depression of the heart and partly to vaso-motor depression.

(5) Cocaine is, therefore, a decided circulatory stimulant.

Quinine Produced Artificially by Synthesis.

Remijia pedunculata, one of the spurious cinchona barks, contains a base cupreine. By treating this first with sodium, and then heating the combination with methyl chloride,

GRIMAUX and ARNAUD (*Lyon Medical*, April 26, 1891) have succeeded in producing a compound which is said to be absolutely identical with quinine.

FUCHSIN IN THE TREATMENT OF CHRONIC ULCERS.

ROSENBERG (*Deutsche Medizinal-Zeitung*, April 2, 1891, and *New York Medical Record*, No. 24, 1890) has employed this drug, in the proportion of seven-tenths grain to half an ounce each of alcohol and distilled water, for the treatment of painful and foul-smelling indolent ulcers. After washing the wound with warm water, the solution is applied by means of a linen cloth, which may be kept in place for two to four days. The results are said to be excellent, and the cheapness of the drug commends it to popular use.

TREATMENT OF CHLOROSIS BY SUBCUTANEOUS INJECTION OF IRON-SALTS.

Subcutaneous injection of iron-salts in the treatment of this affection is recommended by MAGAGNI (*Deutsche Medizinal-Zeitung*, April 30, 1891, from *Raccoglitore med.*, 17 and 18, 1890). The pyro-phosphate, citrate, or citro-ammonium pyro-phosphate may be employed in dose of three grammes in a five per cent. solution. The injection is made subcutaneously, preferably in the nates, with a long needle, so as to deposit the solution some distance from the point of puncture. After this a gentle massage of the spot is made to favor distribution and absorption of the solution. Ten cases are reported, all of which were promptly cured by this plan of treatment.

VON GIETH'S DRESSING FOR THE CHEST IN PNEUMONIA AND PLEURISY.

PARKER (*Medical News*, May 9, 1891) gives the details of Von Gieth's dressing for diseases of the chest. *Pure* olive oil (no other substance will be just as good) is poured in sufficient quantity into a previously warmed bowl, and a strip of soft cotton cloth, large enough to encircle the chest, is placed in the bowl and completely saturated with the oil. This is then applied to the patient's chest, and outside of it a second strip of dry cloth is placed, and, if necessary, a third, which completes the dressing. This application is said to be most acceptable to patients, and more successful in results than poultices, stupes or other local dressings more commonly in vogue.

TREATMENT OF TOXIC AMBLYOPIA.

The following summary of treatment of various toxic amblyopias is given by CHALTIN (*L'Union Médicale*, May 2, 1891):

(1) *Alcoholic Amblyopia.*—Immediate abstinence from alcoholic drink. Improve nutrition by tonics and diet, with bromides for cerebral excitation. Locally, instillations of pilocarpine. To increase nerve tone, strychnia hypodermically, electricity, hydrotherapy and ocular douches.

(2) *Tobacco Amblyopia.*—Moderated use of tobacco; cigars to be smoked only two-thirds. If well-marked symptoms exist, withdraw tobacco altogether. Stimulate nutrition. Inhalations of nitrite of amyl; subcutaneous injections of strychnia; continued currents; ocular douches.

(3) *Saturnine Amblyopia.*—Treatment of lead poisoning: sulphur baths, iodide of potassium, purgatives, tonic regimen.

(4) *Quinine Amblyopia.*—Purgatives and diuretics, inhalations of nitrite of amyl, injections of strychnia, and electricity.

(5) *Antipyrin Amblyopia.*—Withdrawal of the drug has proved sufficient.

(6) *Sulphide of Carbon Amblyopia.*—Abaudonment of profession. Tonics, iron, quinine, strychnia subcutaneously, inhalations of nitrite of amyl, and electricity.

Fel Bovis Inspissatum.

Porter (*Medical News*, May 2, 1891) writes very suggestively concerning the value of inspissated ox-gall in all functional derangements of the digestive and hepatic systems. When taken into the stomach, in doses of two to five grains in capsule, this agent is said to temporarily retard the flow of hydrochloric acid and to stimulate a more copious discharge of a more active milk-curdling ferment and an improved pepsin. A certain amount of the bile, which passes on into the intestine, there aids in the diastatic and peptonizing actions which are complete at this point, prevents putrefaction, stimulates the intestinal secretions, and acts as a natural stimulant to the muscular coat of the whole intestinal tract. Finally, when conveyed to the liver, it is partly converted into new and healthy bile, and partly aids in the vital processes carried on by the protoplasm of the hepatic cells. In the light of this knowledge the author believes that ox-gall becomes one of the most potent physiological antipyretics at command. Its use in typhoid fever is commended as rational and successful, and, in as many as fifty observed cases, the duration of the disease thus treated has been shorter, and the attack milder, as compared with many cases previously observed.

Review of the Therapeutic Uses of Alkaline Medication.

An interesting review of the therapeutic uses of alkaline substances is published by H. Soulier (*Lyon Medical*, March 22, 1891). The author seems to have exhausted the literature of the subject, and shows that alkaline medication has accomplished excellent results in the treatment of a large variety of diseases. The reviewer studies the actions of alkalies as follows:

A. The agents under consideration have been employed with success as *antiseptics* in combating certain pathogenic micro-organisms, such, for example, as the *oidium albicans*. For *muguet* borax has been used, while the alkaline earths have been the chief remedies in the treatment of intestinal affections. As *disinfectants* they have been of great service in destroying the microbes of typhoid fever, dysentery and cholera, and even the *staphylococcus*. Lime-water has been considered as a specific in diphtheria. Alkalies have failed, however, in preventing the action of certain micro-organisms, such as those of carbuncle and tuberculosis.

B. Locally applied, these remedies have done good as revulsives, derivatives, etc. They have been of special service in dry dermatoses. In these cases soda and potash take the lead in point of usefulness, chiefly the latter remedy. A case of *acne rosacea* of the face, of several years' standing, is mentioned as having been cured by the simple use of potash soap. No better drug as a revulsive for glandular tumors has been employed than the chlorhydrate of ammonium. As vessicants they have been of great value in certain affections of the heart and pleura, in chronic inflammations of the lung, and even in old intra-pelvic and intra-abdominal inflammatory disorders. The same may be said of the local use of potash in the opening of purulent collections. A forty per cent. solution of this agent has been successfully employed in the treatment of ingrowing nails. As a caustic, potash undoubtedly has produced in many instances curative effects. For catarrh of the stomach no better remedy has been advised than the acetate of ammonium. In anachlorhydric and hyperchlorhydric conditions of the same organ alkaline substances have always been indicated, and in gastric hyperæsthesia, due to excessive acidity, the best results have been obtained from the use of calcined magnesia. Simple ulcer of the stomach has been successfully treated by the bicarbonate of sodium.

C. Alkalies exercise a well-pronounced physiological action through the circulation, and thus they have produced remarkable effects, especially the sodic and potassic salts, in acute articular rheumatism. In rheumatism due to acid diathesis, particularly to an excess of lactic acid, the power of alkaline drugs is great. Rheumatismal scleritis has yielded to the influence of the salicylate of lithium in doses of two to three grains. Scarlatina has been successfully combated by carbonate of ammonium, and in such conditions as *scorbutus*, where the organism is poor in potash, this remedy has done great good. The use of the hydrochlorate of ammonium in fevers complicated with intestinal, and more especially so

with bronchial catarrh, is still in great favor. The good effects of the bicarbonate of sodium have been observed even in cholera, in which the blood is greatly lessened in alkalinity. In such conditions intravenous injections of alkaline solutions have been suggested.

D. As powerful alteratives alkaline salts have for a long time been recognized as possessing valuable properties. As such they probably affect the system in three ways: (1) In accelerating the renewal of organic elements; (2) in modifying these same elements; and (3) in neutralizing, through a chemical action, a dyscrasic tendency. Experience has shown that these remedies have produced beneficial results in the treatment of such disorders as gout, urinary and biliary gravel, diabetes mellitus and others. Bicarbonate of sodium has been administered intravenously, with good results, in the treatment of diabetic coma. For diabetes the best salts employed have been carbonate of lithium and arseniate of sodium, and for certain arthritic dermatoses benzoate of lithium in combination with jaborandi and guaiacum. In biliary lithiasis the alkaline substances do good by favoring the expulsion of the calculi and by preventing their formation.

E. Alkaline waters are true destroyers of biliary deposits. Again, as the alkalies are mainly eliminated by the kidneys, their action through these organs is threefold: (1) They modify any catarrhal state of the urinary organs; (2) they diminish the acidity of the urine, thus lessening the probabilities of stone formation; (3) they directly dissolve uric acid calculi; and (4) they favor the expulsion of the same. As a preventive of uric acid gravel, the biborate of ammonium has been employed with success, and fifteen grains of the same salt, given every two hours, have prevented nephritic colic.

F. As resolvents the alkaline salts have been equally successful. Thus, in scrofulous adenitis, in chronic peritonitis, in chronic pleurisy and in other disorders, these remedies have been of value and continue to be employed to produce a desired resolution. Even in the treatment of local syphilitic lesions the employment of neutral soaps, by means of frictions, has been suggested on good experience.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND W. REYNOLDS WILSON, M.D.

Rectal Saline Injections for Acute Anæmia.

Herr and Haussmann (*Centralblatt für Gesammte Therapie*, H. 5, 1890) report the successful employment of rectal injections of one-half per cent. lukewarm salt water in a case of severe hemorrhage from premature detachment of the placenta. The loss of blood continued throughout a difficult version and extraction, and after delivery the mother was in a condition of collapse, the pulse barely perceptible, and the superficial veins of the arm empty. The patient did not react, although subcutaneous injections of camphor, ether and internal stimulants, together with massage of the uterus had been used vigorously. Transfusion and subcutaneous injection of the saline solution were impracticable, and about two quarts of the fluid were introduced into the rectum and the pelvis elevated. The injection was repeated later, and soon after the pulse could be felt feebly returning. The following day the patient's condition had improved considerably, and convalescence was soon established.

Operative Treatment of Cancer of the Uterus during Pregnancy and Labor.

As this complication of pregnancy and labor is so rare and its treatment so unsatisfactory, the two cases reported by Sutugin (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band

xix., Ht. 1, 1890) are not without interest. Winckel has met with eight cases in fifteen thousand labors; Stratz, twelve in seventeen thousand nine hundred, and Sutugin, two in nine thousand. Both patients of the latter had reached the end of pregnancy; the children were living, and the disease of the cervix and adjacent tissue was so far advanced that radical treatment or delivery *per vias naturales* was impossible. The Porro operation was performed in one case, the patient dying forty-two days after operation from gangrene of the lungs; the child lived. In the second case the Porro-Müller was selected; the patient lived eight days, and the child died two months later from inflammation of the lungs. Sutugin corroborates the belief of many observers that, under the influence of pregnancy and the puerperium, the destructive character of the cancer is intensified; that it rapidly involves the mucosa of the body of the uterus, and thus so frequently causes premature expulsion of the product of conception. Lenees places the proportion of the latter at forty per cent.; Cohnstein, at twenty-nine per cent. When pregnancy reaches full term, the prognosis for the mother is very unfavorable; only forty-three per cent. live through the puerperium (Cohnstein). Of one hundred and eighty mothers seventy-two died, thirteen undelivered. The child's life is also in the greatest danger. In but thirty-three and three-tenths per cent. of all cases are children born alive (Cohnstein). When premature labor occurs, forty-two and eight-tenths per cent. of the children are born dead.

In view of these most unfavorable results for both mother and child, Sutugin believes that the operative treatment of cancer complicating pregnancy should be of the most energetic character. The modern favorable results of total extirpation of carcinoma teach us that this operation should be performed in the first months of gestation regardless of the pregnancy. The successful cases of Landaw, Kaltenbach and Hofmeir demonstrate this. When gestation has reached the fifth or sixth month and extirpation is yet possible, he approves Freund's operation, modified by Zweifel, *i.e.*, a Porro followed by extirpation of the remaining cervix through the vagina after the abdominal incision is closed. This operation, more than any other, prevents infection of the peritoneal cavity. Evacuation of the diseased uterus and subsequent extirpation are to be employed only when the diseased process has not extended to the surrounding tissue. When such has occurred, induction of abortion, or premature labor, is contraindicated on account of the probability of sepsis. Only to the end of the fourth month of pregnancy can preparatory emptying of the uterus be advantageous, since it debars laparotomy and its attendant dangers. When pregnancy has reached term and the cancerous disease is so widespread as to exclude all hope of complete removal, then Cæsarean section must be considered. Deep incisions of the cervix and delivery by version or with forceps are to be used only in selected cases, on account of the bad results of spontaneous labor.

Of twelve cases of Cæsarean section (ten were by the old method, and in two the uterus was stitched), four mothers survived the operation, and two children were extracted dead (Hermann). The Sänger operation has been done in six cases; three mothers and all the children remain living. In all the eighteen cases, as the result of the operation, eleven mothers died, and two children were extracted dead. Cæsarean section and removal of the body of the uterus have been done successfully twice by Leopold. Two fatal cases are reported in Russia. Sutugin's two cases were successful so far as the operation was concerned. Most authors favor Cæsarean section. Winckel prefers, when it is at all possible, to deliver the child by the natural passages, by inducing premature labor, incising cervix, and resorting to forceps or version, or even craniotomy on the living child. Sutugin, from his studies and experience, agrees with Fehling that abortion, premature labor or craniotomy, should be rejected in favor of the Porro-Cæsarean section. Where the child dies before the beginning of labor and the pelvic structures are much involved, he advocates the Porro. In one case, in which the Porro was not performed because the child had died, the mother died undelivered (Oldham), and many deaths occurring soon after labor are reported. The sufferings of the mother when the cervix is badly deformed and the child considerably developed, in addition to the above noted dangers, make it not only justifiable but humane to do the Cæsarean section, even when the child is dead.

Inversion of the Uterus.

Remy (*Archives de Tocologie et de Gynecologie*, Feb., 1891) reports two cases of inversion of the uterus, each of special interest and each of important bearing on the causation of this accident. The first was that of a primipara who was delivered by a midwife. The method of removing the placenta by traction upon the cord in the axis of the inlet with one hand and compression of the fundus with the other was employed. Palpation, in order to determine the retraction of the uterus, failed to reveal the organ in its proper position in the pelvis. Suspecting hemorrhage, she made an internal examination and discovered, within the vulva, a tumor which completely filled the vagina. The writer, on his arrival, found an inversion of the second degree. After an unsuccessful attempt at reduction by grasping the tumor in one hand and making compression with his fingers at the level of the pedicle, while he made counterpressure from without, he effected a reposition by pushing against the body of the uterus with the convex, dorsal surface of the fingers, slightly flexed, of one hand, at the same time making counterpressure with the other. When he had replaced the uterus he allowed his fingers to remain in the cavity, in order to excite contraction, and after giving an antiseptic irrigation he delivered the case over to the former attendant.

Inasmuch as there had been no adherence of the placenta and no violent traction, he concludes that the accident must have been due to some special cause. To explain this, he alludes to the important factor in uterine retraction, namely, the contraction of the uterine surface at the site of the placenta coincident with that of the rest of the uterus, in order to fill the void created by the detachment of the after-birth, and shows how, in this case, the absence of this factor played an important part in the inversion. The placental site, in this case, failing to contract, became inverted by the effect of the removal of the placenta, which acted like the piston of a pump, or, in other words, the abdominal pressure forced the lax uterine wall into the retroplacental space; the consertive influence, in such a condition, exerted by the resistance of the clots which accumulate behind the placenta, proving ineffectual.

The second case is that of a young woman, who, after her second confinement, which was normal in every respect, upon leaving her bed, suffered from a severe hemorrhage which was repeated after a few days without apparent cause. In both instances hypodermic injections of ergotine were used successfully to control the hemorrhage. The writer, upon examination some days later, discovered a friable tumor occupying the vagina just within the introitus. Owing to the consistence of the mass and the offensive odor of the discharge, he concluded that he had to do with a retained portion of the placenta. The attempt to remove the mass with a volsella gave rise to profuse hemorrhage. After a more careful bimanual examination, he discovered an inversion of the second degree. This he treated by means of continuous pressure by cotton tampons covered with iodoform gauze. He explains this production of inversion, so late in the puerperal state, as follows: There was, in all probability, a retention of a small portion of the placenta which caused a local congestion at this point, under the influence of which the uterine tissues at the insertion of the placental polyp, became gradually more and more yielding until the contraction of the rest of the organ forced it through the partially dilated os.

Fœtor of the Lochial Discharges.

Boxall (*Practitioner*, May, 1891) points out the real value of fœtor of the lochia in the diagnosis of septic infection. He demonstrates by the analysis of six hundred and forty cases that foul-smelling discharges may occur without septic infection of the individual, and even without the smallest elevation of the temperature. On the other hand, septic infection may exist and may prove fatal without the foul odor to the discharges which so many physicians look for, as the only sign of sepsis after labor, and without which so many conclude that sepsis may be excluded. In the six hundred and forty cases there were six deaths from sepsis, in one of which the lochial discharge was never offensive. There were, in the

same series, three cases in which the lochia were fetid without disturbance of the patient's health and without elevation of temperature. In addition to these cases there were a considerable number in which the lochia were fetid, but in which there was neither septic infection nor intoxication, although there was a slight evanescent rise of temperature. Of the whole number of cases observed, 120, or 18.7 per cent., had foul-smelling discharges, 78, or 12.1 per cent., had fœtor and sepsis; 42, or 6.5 per cent., had fœtor without sepsis; 192, or 30 per cent., had sepsis without fœtor. [These statistics from the General Lying-in Hospital are for the years 1882–84, before the use of corrosive sublimate.]

The Pathology of Prematurely-detached Placenta.

Meyer (*Correspondenz-Blatt für Schweizer Aerzte* XXI., April 1, 1891) gives a careful description of the pathological anatomy of prematurely-detached placenta. As introductory to this, however, he alludes to the recent investigations in the anatomy of the placenta, which have shown that the villi of the chorion frondosum insert themselves into the decidua serotina, partly by penetrating between the cells of the latter, partly by devouring them, like the cells of a malignant growth, and attach themselves in the dilated glands and within the open vessels. This area of attachment of chorion to decidua constitutes an important part of the placenta; but beneath this the area of decidua, in which the dilated glands and lymph spaces lie, constitutes the connection between the maternal and fœtal tissues. It is in this layer that the inadequately supported vessels are liable to rupture, owing either to a forcible impulse or to a pathological condition of the tissues themselves, thus giving rise to the hemorrhage, which in turn causes the detachment.

Considering the question of etiology irrespective of those cases in which traumatism is responsible for the hemorrhage, there are a host of those who put forward one or another theory based upon clinical studies alone. Among the foremost of these he mentions Fehling, who advocates the theory of nephritis as a cause. The writer, although he emphasizes the importance of a careful examination of the urine, states that in not one of the four cases which he reports was albumin found. He has found, however, in his investigations in the pathological anatomy of the placenta, at least, in as many placentæ as he has studied, the changes which give rise to the detachment. The cells of the decidua on the maternal surface of the placenta appear cloudy and are difficult to stain. Their contour is often indistinct, and in the intervillous spaces white blood cells are found, either lying alone or arranged in groups, a condition which has been designated as endometritis decidualis, and which is most often discernible by the microscope alone. The hydrorrhœa gravidarum which was present in one of his cases depends, in his opinion, upon this same inflammatory condition of the decidua.

Microscopic Study of the Constituents of the Lochia.

Astemieff (*Deutsche Medizinal-Zeitung*, March, 1891) presents an interesting analysis of the lochial secretion. In a healthy puerpera the lochia during the first few days contain principally red corpuscles, with a few bodies which he calls locheiocytes. These resemble pus corpuscles in some respects, but differ first in size, being larger, and next in the reaction to certain stains. When a strong watery solution of gentian violet or methyl blue is used the locheiocytes exhibit deeply-stained nuclei surrounded by a clearly-marked circle of less intense color, while the pus cells appear uniformly stained, without exhibiting nuclei.

Normal lochia contain neither pus corpuscles nor micro-organisms. If the former are found, they are to be considered as pathological products.

White Infarcts of the Placenta.

Jacobsohn (*Deutsche Medizinal-Zeitung*, March, 1891) reports the results of the histological examination of white infarcts from a number of placentæ. He found that the

changes are referable primarily to a hyaline degeneration of the decidua. The endothelium of the serotinal vessels and of their remote branches constituting the intervillous spaces is first affected. The blood in these vessels coagulates, and as a consequence the surrounding tissue becomes necrotic. The necrosed villi surrounded by decidua present the characteristic appearance of white infarcts. The writer claims, however, that this name is not appropriate to this condition, and prefers "hyaline degeneration of the decidua, with consequent necrosis of the villi."

He agrees with the majority of writers on this subject, in ascribing the source of these changes to the maternal structures.

GYNECOLOGY.

UNDER THE CHARGE OF

WILLIAM GOODELL, M.D.,

ASSISTED BY

J. M. BALDY, M.D.

Ovariotomy as a Prophylaxis and Cure For Insanity.

Robert A. Kitto (*Journal of the American Medical Association*, April 11, 1891) reports a case of pseudo-insanity in which he removed both ovaries with their tubes, bringing about a complete restoration of a mind which had been under a cloud for thirteen years, and which had been pronounced incurable insanity. The operation was done in face of the opposition of all the consultants. The ovaries were both adherent and contained pus. In releasing the adhesions from the intestines, the gut was opened on one side, but was repaired by Lembert sutures. Almost immediately on coming from under the anæsthetic her facial expression was changed for the better. She rapidly recovered both from her operation and her insanity. He believes this case will do much to establish his theory, that hundreds of unfortunate women are languishing in insane asylums who might be cured by a similar operation. The patients are not insane in the usual acceptation of the term, but are subjects of reflex irritations.

On the Remote Effects of Removal of the Uterine Appendages.

Lawson Tait (*New York Medical Record*, May 2, 1891) writes that it is quite well known that in both animals and mankind removal of the uterine appendages, some time before the access of puberty, will prevent the growth of sexual personalities and the development of sexual passion, the result being, among other things, that the immature characteristics are more or less maintained in women, the girlish form and character being entirely replaced by those of mature woman. It is perfectly clear that the remote results of removing the uterine appendages, in animals as well as in the woman, before the access of puberty are widely different from those obtained from the same operation performed after the great physiological change. Further confusion ensued concerning the supposed destruction of the sexual passion, by a total disregard of the dissimilarity of the condition of animals and those of men. In animals, the sexual appetite is governed entirely by the period of rut, and the female animal will not permit of the approach of the male save at the œstrus. The human female has no period of œstrus, and permits the access of the male at any time, showing a disinclination only at the menstrual period, which is, therefore, not the period of rut. A destruction of the glands which produce the œstrus would clearly keep the female animal in a constant state of hostility to the male access, but when there is no such arrangement, but really exactly the reverse, the destruction of ovulation (which is really the period of rut in animals) could have no such effect, at least it would not necessarily have it. Prac-

tical experience has proved this to be true after operations for the removal of the appendages. The indirect and remote results of the operation imitate more or less closely those seen at the normal climacteric. Frequently before operations sexual appetite has been for a long time held in obeyance by the disease and pain consequent on intercourse. Removal of the diseased organs permits resumption of intercourse nearly always in a few months, and the temporary disturbance of the sexual appetite by the premature climacteric change effected by the operation, or even its occasional obliteration, is far more than compensated for by its restoration to the sufferer, to whom marital life before the operation was an impossibility.

Voice in Female Singers Affected by Gynecological Disorders.

According to Carl H. Von Klein (*Journal of the American Medical Association*, April 18, 1891), the most difficult cases the laryngologist has to contend with are diseases of the throat caused by disturbance of the ovaries. It is a common thing to meet with cases of acute inflammation of the tonsils, larynx, pharynx and fauces in females during their menstrual period. He has observed the voice in many professional choir singers, who have applied to him for treatment during the menstrual period, defective in gravity; force and timbre, producing in many cases a husky sound, as of a low, masculine order. It is a known fact that prima donnas try to avoid engagements during their expected period. A menstruate can be detected nine times out of ten by the low tone of her voice. In many cases of ovarian disturbance, enlargement and hypertrophy of the tonsils and of the soft palate are observed, hence the laryngologist oftentimes can accomplish but very little without the assistance of a competent gynecologist.

On the Importance of Gonorrhœa as a Cause of Inflammation of the Pelvic Organs.

Bantock (*British Medical Journal*, April 4, 1891), after critically reviewing the past literature on the subject, shows how those who have advocated this idea most strongly differ among themselves. He would not for a moment have it even suspected that he is desirous of minimizing the importance of this disease, much less of denying its power of evil, or that it is capable of producing salpingitis, with its various results, ovaritis and pelvic peritonitis, even to a fatal termination, yet he must insist on a more rigid adherence to the teaching of facts actually observed. Even Sänger, who admits the frequency of gonorrhœal salpingitis, goes so far as to say that "gonorrhœal salpingitis" is never followed by a "destructive suppuration" of the uterine appendages; it remains invariably a disease of the surface of the mucous and serous membranes. Bantock is not prepared to accept the dictum that "the woman who has suffered from gonorrhœal peritonitis is barren." He quotes cases to prove the falsity of this supposition. It seems very strange to his mind how those who think that gonorrhœa plays such an important part in the production of sterility can do so in the face of the large number of cases of ophthalmia neonatorum that are due to gonorrhœal infection. He quotes cases where both husband and wife have had undoubted gonorrhœa and still the wife conceived; also cases in which the husband has had gonorrhœa before marriage, and where the wife has remained well and borne large families.

Successful Cæsarean Section.

H. A. Kelly (*New York Medical Journal*, May 2, 1891) reports a successful case of this character. It makes the fourth operation of the kind he has performed, all proving successful. The patient was a dwarfed rachitic, 35 years old. The present pregnancy was the third. The first child was delivered at term by craniotomy; the second was a dead child, born naturally. The operation was performed a few hours after labor had begun. The true conjugate measured 7.5 centimetres (2½ inches). The mother made a good convalesence, the temperature rising above 100° only once. The stitches were removed on the sixth day. The

patient was out of bed on the fourteenth day. The baby nursed the morning following the operation and continued regularly at the breast. Some three months later, the mother wrote that both she and the baby were well.

Removal of Immense Œdematous Myoma Weighing 93½ Pounds.

McIntyre (*St. Louis Medical and Surgical Journal*, March, 1891) reports the following case: M. A. J., single, 38 years old, five feet five and a half inches high, weighing 199½ pounds. The abdominal measurements were as follows: Circumference at largest part, just below umbilicus, 50 inches; circumference just below the mamma, 35 inches; xyphoid cartilage to symphysis pubis, 32 inches; xyphoid cartilage to umbilicus, 13 inches; umbilicus to symphysis pubis, 19 inches; right anterior superior spine of ilium to umbilicus, 14 inches; left anterior superior spine of ilium to umbilicus, 13½ inches. The tumor was removed by abdominal section, a supra-vaginal hysterectomy being performed. The mass proved to be an œdematous fibroid of the uterus and weighed 93½ pounds. The patient died with septic symptoms at the end of five days. This is the largest tumor of the kind on record. Keith removed one weighing 42 pounds. The largest one ever seen by Tait weighed 68 pounds.

The Remote Results of Shortening the Round Ligaments for Uterine Displacements.

Newman (*St. Louis Medical and Surgical Journal*, March, 1891) states that the modification of Alexander's operation for shortening the round ligaments in uteri, proposed by Edebohls, viz., opening the inguinal canal to the internal ring, was practised by himself for about a year and a half prior to Edebohls. He reports the results, after two years, of seven cases operated upon by himself. At the end of this period, the uterus was found in good position in six cases; one case could not be seen for examination, but as all her bad symptoms had disappeared and remained away it is presumed her uterus remained in proper position. All the cases were relieved of their symptoms and remain well. One case became pregnant and was delivered safely of a living child. The uterus was afterward found in good position. The indications for the operation in the respective cases were retroversion or prolapse of both uterus and ovaries. Some of the cases were of three, five and fifteen years' standing. Only one case was complicated by adhesions. Pessaries had been formerly tried in six of the seven cases, but in each of those with ovarian complications, they were a source of too great irritation to be tolerated, and in the remaining two had resulted in no appreciable benefit.

Vaginal Hysterectomy for Cancer.

Cushing (*Annals of Gynæcology*, May, 1891) urges the total extirpation of the uterus in malignant disease of the body of the uterus. He has performed the operation twenty-one times. All the patients recovered from the operation, excepting two. In three cases the whole disease could not be removed. In seventeen cases complete removal of the disease was accomplished, and the patients recovered from the operation. Six of these seventeen cases were operated upon in the last six months and are not available as far as regards the question of recurrence. The other eleven cases had their operation a year or more ago. Of these eleven three are dead, and one will soon die from recurrence. The other seven are in excellent health. In two cases the bladder was injured at the time of the operation, and in three others the patients began to "leak" a few days after the operation. These fistulæ were subsequently closed. In two cases it closed itself. In one case the ureter was cut through. Subsequently a sound was passed through the urethra and bladder out into the vagina and then into the contiguous opening of the ureter. Then by a plastic operation the sound was covered in with mucous membrane, and thus the ureter was made to empty into the bladder.

Constipation and its Relation to Pelvic Diseases in Women.

Root (*Southern Medical Record*, May, 1891) calls attention to constipation as a frequent factor in pelvic diseases in women. The habit of constipation is largely due to carelessness, especially in childhood. In the adult female, constipation is very frequent, and many of its symptoms point to pelvic disease; pain in the back, pain in the top and back of the head, a feeling of weight in the limbs, dysmenorrhœa and leucorrhœa, subjecting the patient to local treatment, when changes in the modes of life, with relief of constipation, would restore health. It is also very evident that this disease acts as a most active factor in the production of pelvic disease in women; for where endocervicitis and even retroversion exist, rapid improvement is made as soon as constipation is relieved. Pelvic disease results from constipation through pressure and keeping up a constant condition of sluggishness of the pelvic circulation, amounting practically to a chronic congestion. Many cases of pelvic disease can be cured by the proper regulation of the bowels, and he cites cases in proof of this statement.

Minor Uterine Surgery.

Baldy (*Medical News*, May 16, 1891) writes that the trouble in minor uterine surgery lies not so much in the fact that it is done for true uterine disease, but that it is done, under a mistaken diagnosis, for diseases which exist outside the uterus. The uterine sound, dilatation of the cervix, intra-uterine medication, the curette and operations on the cervix, all have their legitimate place in gynecological practice. The field is not a large one, but where the proper indications exist the results are most happy.

MISCELLANEOUS.

RESOLUTIONS IN REGARD TO DR. LEIDY'S DEATH PASSED BY THE AUXILIARY FACULTY OF MEDICINE, UNIVERSITY OF PENNSYLVANIA.

At a regular meeting of the Auxiliary Faculty of Medicine of the University of Pennsylvania held May 23, 1891, the following resolutions were adopted:

Resolved, That this Faculty has heard with profound regret of the decease of its esteemed fellow-member, Dr. Joseph Leidy, the late distinguished Professor of Comparative Anatomy and Zoölogy in this department of the University.

Resolved, That this Faculty cordially unites with the other learned bodies of which Professor Leidy was an honored member, in recording their sense of his merits as a scientist and of his eminent qualities as a teacher and a fellow-professor.

Resolved, That a copy of these resolutions be forwarded to the family of our deceased fellow-member; and also that they be published in the UNIVERSITY MEDICAL MAGAZINE.

J. T. ROTHROCK, *Dean.*

MINUTE RECORDED BY THE FACULTY OF MEDICINE, UNIVERSITY OF PENNSYLVANIA, REFERRING TO DR. LEIDY.

THIS Faculty, desiring to record an expression of appreciation of their late colleague, Joseph Leidy, and of the value of his services, not only to the University of Pennsylvania, but to natural science in all of its departments, make the following minute:

One of the earliest and pointed evidences of Dr. Leidy's thorough appreciation of the essential qualifications of a student of natural science is seen in his promptly mastering, by unaided effort, the Latin tongue as the acknowledged language of science, together with the modern French and German as the media of numerous current contributions to the subject. Thus equipped, he approached science with the true spirit of investigation, desiring only to unfold her secrets and to offer them to others. Hence he lost no time in seeking remote fields to explore, but found them in the moss on the bricks in his yard, under the stones in the pools and creeks of the vicinity of Philadelphia, as well as in the mammoth fossils of the Rocky Mountains. Hence the number of his descriptions was enormous. So unselfish was he, and so unlimited seemed to him the field of nature, that when he found others entering a department which he had commenced to explore, he did not, on the plea of priority, seek to expel them, but preferred rather himself to seek other fields, knowing that there was unlimited opportunity in almost any direction.

His work was characterized by a thoroughness which scarcely knew error; but when error crept in, he was ready to admit it. Never hasty and seldom impatient, his contempt for sham and falseness permitted the nearest approach to expressions of impatience he permitted himself to utter.

Graduated from the Medical School of the University of Pennsylvania in 1844, he entered its service as Professor of Anatomy in 1853, when thirty years of age. From this time until his death, on April 30, 1891, his devotion to his duties of the chair was unabated, and no professor missed fewer lectures. The immense stores of information which crowded his mind were constantly called upon to unravel problems in mineralogy, botany, helminthology and histology, which were sent to him from all sources and localities. The promptness and accuracy of his replies astounded all inquirers, while his modesty and fairness kept in the background all show of learning.

ELECTIONS IN THE MEDICAL DEPARTMENT, UNIVERSITY OF PENNSYLVANIA.

THE death of the lamented Leidy vacated the chair which he filled for nearly forty years; in the selection by the Trustees of Dr. George A. Piersol for the Chair of Anatomy, and the appointment of Dr. John B. Deaver to an Assistant Professorship of Applied Anatomy, it is thought that the requirements of this important department have been happily met.

Dr. Harrison Allen has been elected to the Chair of Comparative Anatomy in the auxiliary Faculty. This distinguished teacher and investigator thus returns to active duty; and when the four-year course goes into effect in 1893, it is expected that he will conduct elective courses in advanced human anatomy.

The Clinical Professorship of Genito-urinary Diseases, which has been for some time vacant, has been most satisfactorily filled by the appointment of Dr. Edward Martin. Dr. Edmund W. Holmes has been appointed Demonstrator of Anatomy; Dr. Robert Formad, Demonstrator of Histology.

One of the most cogent reasons for establishing the four-year course has been the discovery that it is impossible to maintain the high standard of the University within the limits of a three-year course without overworking the students. For the next two years, pending the greatly enlarged and improved curriculum which will go into effect in 1893, the courses in Chemistry and Pathology will be modified so as to secure equal practical efficiency with less tax upon the student. The course in special Pathology, which has extended over two years, will be arranged so as to be completed in a single year. The same lectures will be given both in the second and third years. Physical Diagnosis will be begun in the first year, so that the student will have the advantage of progressive study of this essential branch throughout the entire course.

THE APPOINTMENT OF RESIDENT PHYSICIANS.

THE result of the examination for members of the resident staff of the Philadelphia Hospital was announced at a recent meeting of the Board of Charities and Corrections. Of the twenty appointments, the University received twelve, the Woman's Medical College two, Medico-Chirurgical two, Jefferson one, Woman's Medical College of Baltimore two, and the Columbian Univesity, Washington, one. The examination was conducted, as usual, by the Civil Service Commission, the examiners being representatives from the University, Medico-Chirurgical and Jefferson. The result of the examination for two years under the new Civil Service Commission gives, out of forty appointments, twenty-five to the University, five to the Woman's Medical College, five to the Medico-Chirurgical, two to Jefferson, two to the Woman's Medical College of Baltimore, and one to the Columbian University. The examinations at the other hospitals in the city and its vicinity have given the usual percentage to the University of Pennsylvania.

RESIGNATION OF DR. JAMES B. WALKER.

Dr. James B. Walker, for twelve years Professor of Practice of Medicine at the Woman's Medical College, in this city, has resigned that chair on account of the pressure of private business.

At a stated meeting of the Faculty of the Woman's Medical College of Pennsylvania, held May 16, 1891, the following action was taken regarding his resignation:

"The Faculty has received, with sincere regret, the announcement of the resignation by Dr. James B. Walker of the Chair of the Practice of Medicine in this College. Dr. Walker has held the chair of practice during a period of twelve years, and has continuously merited and received the highest appreciation of his colleagues in the Faculty, of the associate teachers and of the students.

"In all the relations incident to the position he occupied, he demonstrated his urbanity, integrity and unusual ability. He enthusiastically and successfully fulfilled not only the duties directly pertaining to his connection with the college, but he was also very active and successful as a clinical lecturer at the Woman's Hospital.

"As one of the physicians to the Philadelphia Hospital he greatly enlarged his usefulness to our students by gratuitously extending to them invaluable bedside instruction in that hospital. He contributed to the harmonious working of the Faculty, and rendered material assistance in advancing the prosperity of the college.

"The exactions of his extensive private practice have influenced Dr. Walker to present his resignation. The Faculty extends to him its best wishes for his continued prosperity and happiness."

Clara Marshall, M.D.,
Dean.

THE INTER-CONTINENTAL AMERICAN MEDICAL CONGRESS.

The committee appointed by the American Medical Association to effect a permanent organization of the Inter-continental American Medical Congress met at "The Arlington," Washington, May 7, 1891. The following officers were elected: Charles A. L. Reed, M.D., Cincinnati, O., Chairman; J. W. Carhart, M.D., Lampasas, Texas, Secretary; I. N. Love, M.D., St. Louis, Mo., Treasurer.

On motion, the officers were appointed a special Committee to draft a Constitution and report the same at an adjourned meeting of the General Committee, to be held at St. Louis, Mo., Wednesday, October 14, 1891, when the time and place of meeting of the Congress will be decided and permanent officers be elected.

THE AMERICAN SOCIETY OF MICROSCOPISTS.

This association, now in the thirteenth year of its existence, will hold its fourteenth annual meeting in Washington, D.C., August 10, 1891, and continue in session five days. Its roll of active members contains about 350 names,

embracing very nearly every person in the United States who is at all prominent as a microscopist. Its membership consists of two distinct classes, viz., professional men and students of the natural sciences, who use the microscope in their daily avocations as an instrument of research, diagnosis, or precision; and amateurs, or those who find pleasure and profit in the revelations of the instrument. Many of the latter class, from having early chosen special lines of study and investigation, have acquired high reputations in their respective departments of microscopical research. In its earlier years this class predominated in the membership of the society, but at present the professional element is largely in excess.

CORRESPONDENCE.

STATE CONTROL OF ADMISSION INTO THE MEDICAL PROFESSION.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE:

GENTLEMEN: Many years ago I began an active agitation in favor of State control over entrance into the medical profession, so that my personal convictions are well known to those especially interested in the matter. The opponents of such control have always asserted that, under our system of Government, the gravest dangers beset State examinations; but in my opinion the very evil fruits, which have been yielded by the *free* system, justify, or rather demand change, and I have hoped, and still do hope, that public opinion will prevent State Medical Examining Boards from becoming nuisances. It is, however, very apparent that if such questions are to be asked as those which the New Jersey State Medical Examining Board formulated in the late examination upon Materia Medica and Therapeutics, it cannot be long before the profession will demand the repeal of the legislation for which it is now becoming clamorous.

It is my belief that such result can only be prevented by very free, outspoken comment and criticism by medical journals and by individual medical teachers, that has led me to write the present letter to your Magazine, and disturb the ease of my old age by stirring up what may well prove a hornet's nest.

State Medical Examining Boards must exert great influence upon teaching faculties, and there always is danger that medical schools shall prepare men for Examining Boards rather than for practice of medicine. It therefore behooves Examining Boards to take great care that their questions have close relations to practical medicine, and especially to *modern* practical medicine.

Perhaps it is not necessary for me to state that I am a professor in a medical college, known to some of your readers; that I am an editor of various editions of the United States Dispensatory; and that I am the author of a Therapeutics that has considerable sale. Now, I affirm not only that I could not, off-hand, answer the questions presented by the Medical Examiner, but that I would be ashamed of myself if I could.

On the one hand a candidate might be thoroughly familiar with almost any one of the high-class modern treatises of therapeutics and not be able to answer these questions, whilst on the other hand these questions could be answered by one who had no valuable knowledge of practical therapeutics.

Take question number one: What is dialyzed iron, and how is it prepared? Dialyzed iron is a worthless preparation of iron, which has never been recognized by the United States Pharmacopœia, and is, I believe, no longer used by physicians who are anyway near abreast of the times. In my lecture I simply mention it as a pharmaceutical curiosity that is worthless. It seems to me a first principle of examinations by Medical Boards should be that attention must be confined to officinal preparations. If the candidate is to be asked a lot of foolish questions upon every kind of preparation, invented by some perhaps semi-addled pharmaceutical brain, how is he to gain any knowledge? He must be forever running after the chaff that is blown away by his teachers.

Then again, question third. How many practical doctors can give the specific gravity of chloroform, and what use would it be to them if they could?

Question fourth: "Give the formula and mode of making camphorated tincture of opium." If there were a candidate for graduation in the University of Pennsylvania who could answer this question, I would certainly examine him most severely to see whether he had not grasped at the shadow and lost the substance of true knowledge. Our men are all taught that the strength of paregoric in opium is two grains to the ounce, that it contains some camphor, and that is all that it is necessary to know about its materia medica or pharmacy.

Question number five: "Give the formula of the compound cathartic pill." I doubt whether there can be found a doctor in Philadelphia, in sufficient repute to have a practice of three thousand dollars a year, that could answer this question; to know the effect of this conglomeration of cathartics is what the medical practitioner needs. Again, why should a doctor be required "to describe infusion, decoction, maceration and digestion," and not one word asked about the physiological or remedial action of such remedies as opium, quinine, alcohol, digitalis, mercury, arsenic, veratrum viride, aconite, strychnine, nitrites, cathartics, tonics, emetics, or almost any other drug of any value? Indeed, the only drug whose general effect upon the human system is inquired into is one that is not officinal.

I have heard it openly stated, by some physicians of standing, who professed to have knowledge, that, at least in some departments, the members of the New Jersey State Medical Examining Board did not themselves prepare the questions, but referred the matter to outside experts. I have no personal knowledge of the truth of this allegation, but certainly the questions themselves are of such character that if this examination is to be the type, one of two

things must happen: thoroughly trained graduates of medical schools of the first class must either fail altogether, or at least go to the bottom of the list, or else medical colleges will have to strive to make mediæval lumber-attics of the heads of their students, much to the disgrace of American medicine and the detriment of American communities.

H. C. Wood, M.D.

Philadelphia, June 14th, 1891.

A COMMUNICATION FROM THE ILLINOIS STATE BOARD OF HEALTH.

To the Editors of the University Medical Magazine.

Gentlemen: There is a demand, from medical teachers and young men who intend to study medicine, for a literary course preparatory to the study of medicine. This demand has been met by a few of the literary institutions in the United States, and it is hoped and believed that it will be much more generally met during the next two years. The following institutions now offer science courses for students that intend to study medicine, or that intend to teach or otherwise engage in biological work:

1. University of Wisconsin;
2. University of Pennsylvania;
3. Johns Hopkins University;
4. University of Notre Dame;
5. Yale University;
6. Cornell University;
7. Princeton University;
8. Lake Forest University;
9. North-Western University;
10. West Virginia University;
11. University of Kansas.

As must be obvious, such a course should be based on biology, and should include thorough work in this science, as well as in osteology, comparative anatomy and chemistry, with English, French, German, some Latin, clay modelling, free-hand drawing, mineralogy, mathematics through trigonometry, mechanics, logic, general and pharmaceutical botany, and (in the last year) psychology. It is of course understood that botany, being a branch of biology, should have a prominent place in the course. Such a course is also the best preparation for the study of veterinary science.

The catalogues of the universities mentioned contain the lists of studies offered in their science courses.

Such a course should extend over four years. This will involve no loss or waste of time to the student. The Illinois State Board of Health now requires that students of medicine matriculating in the autumn of 1891, or thereafter, must study medicine four years and must attend three courses of lectures—no two in the same twelve-month—in order to obtain a license to practise in Illinois. This rule will apply also in some other States. The Illinois State Board will, however, recognize a thorough course in science, such as indicated above, as equivalent to two years' study and one course of lectures, thus enabling the student to enter the second class in the medical college. This

makes the full time of study six years in the literary and medical schools, or two years less than is required of the student pursuing a strictly classical course. Not only will time be thus saved, but the science student will be much better prepared to enter the second course of the medical school than will the classical student to enter the first year.

The Illinois State Board wishes to make up a science course that can be recommended to any college wishing to adopt such a course; and having but little time to study the subject, I desire to enlist your aid and have your advice in the matter so as to make the course as practical and as beneficial as possible. Will your faculty, therefore, make out such a course as it thinks best for the purpose, and send it to the Secretary of the Board?

The demand from medical teachers and from students of medicine having been met by some universities, must be met by all that would continue to hold a high rank as educators of young men for the work of life.

Respectfully,

JOHN H. RAUCH, M.D., *Secretary.*

Springfield, June 6, 1891.

THE USE OF CANTHARIDES AS MENTIONED BY PLINY.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE:

GENTLEMEN: It is very true, as your excellent correspondent declares, that some things are claimed to be new only because the old are unremembered. He illustrates his statement by reminding us that "the lanolin, of Liebreich, was well known to the ancients. It was recommended by Pliny for the very purpose for which it is used to-day." This statement is not as new as it is true. It was fully set forth in the *National Dispensatory*, fourth edition, 1886, page 1662, where also it is related that the preparation had continued in use down, at least, to the seventeenth century.

Your correspondent further mentions that Liebreich had proposed cantharidin as a remedy for tuberculosis, but that he also had been forestalled by Pliny, who stated facts "showing that the preparations of cantharides were employed for the same purpose." The action and uses of cantharides, as known to the ancients, were described by Hippocrates, Diascorides, Pliny, Paulus Ægineta and others, as was years ago related by the present writer (Stillé, Therapeutics, 1874, fourth edition, I., 419), but nothing in Pliny's Natural History indicates that cantharides were employed as a remedy for pulmonary consumption. In that work their poisonous action is mentioned, as well as the dysury they cause, their use in diseases of the skin, and also their diuretic and emmenagogue virtues, but nothing is said of their use in lung diseases. (*Ed. Littré, Liv.* XXIX., Ch. XXX.) So it *is* evident, as your correspondent assures us, "*Nil sub sole novum.*"

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May 30, 1891.

PROPOSAL OF A NEW METHOD FOR CONTROL OF HEMORRHAGE IN AMPUTATION AT THE HIP-JOINT.

To the Editors of the UNIVERSITY MEDICAL MAGAZINE :

DEAR SIRS: When Dr. Neal Hardy wrote for the May issue of your journal an account of his successful amputation at the hip-joint, in which he performed a preliminary laparotomy for control of hemorrhage by direct digital compression of the aorta, he made a most remarkable omission when he failed to state where he got the idea of his operation.

At a meeting of the Association of Surgeons to the Pennsylvania Company, held at Pittsburgh, on October 19, 1888, *at which Dr. Hardy was present*, I read a paper entitled "Proposal of a New Method for Control of Hemorrhage in Amputation at the Hip-Joint." The new method proposed consisted in preliminary laparotomy and direct digital compression of the aorta. An abstract of this paper is published with favorable comment on pages 168 and 169 of Dr. C. B. Stemen's work on "Railway Surgery," which appeared in August, 1890. Dr. Hardy's operation was done November 28, 1890. I heard of the operation shortly afterward, and, on December 7, wrote to him, recalling to his mind the fact that I had suggested this procedure in the above-mentioned paper, and referring him to Dr. Stemen's book, where an abstract of my paper could be found. I also requested him to give me credit, when he should report his case, for originating the plan of the operation, and offered him a copy of my paper from which to quote. This letter, for reasons best known to himself, he entirely ignored.

Dr. Hardy, in his article, rates the new method very highly, venturing the prediction that it will reduce the mortality of hip-joint amputations more than fifty per cent. If this prove to be true, the idea is a valuable one, and as such is worth precisely as much to the originator as to Dr. Hardy.

About three lines of acknowledgment in Dr. Hardy's article would have satisfied all my demands in the case; but since he has seen fit to withhold such acknowledgment, I am compelled to raise the "hue and cry."

Hoping you will favor me with the publication of this, I am

Yours respectfully,

JOHN J. BUCHANAN.

Pittsburgh, Pa., May 22, 1891.

UNIVERSITY
MEDICAL MAGAZINE.

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ORIGINAL ARTICLES.

LOCAL TREATMENT OF DYSENTERY.

By H. C. Wood, M.D., LL.D.,

Professor of Therapeutics, University of Pennsylvania; Honorary Member of the New York State Medical Society.

There seems to me to be in modern medical thought a very strong tendency to consider disease as constitutional rather than local. I do not doubt but that there are one or more forms of dysentery dependent upon the presence of poisons in the blood, but I feel very confident that the dysentery, as we see it ordinarily in this climate, is essentially a local inflammation, independent of any blood poisoning. If this be true, the disease should be especially amenable to local treatment. It is true that the ordinary treatment, which seems not to be local, really owes much of its efficiency to a local influence. Thus, the purgative acts by a purely local depletion; the mercurial, or the ipecac, by a local stimulation of the glands involved; whilst the bismuth spreads itself upon the mucous membranes and by its local action lessens inflammation. It has seemed to me, however, worth while to draw the attention of practitioners to the value of the direct application of remedial agents to the affected parts.

Many years ago I published a series of cases of chronic dysentery, demonstrating the extraordinary efficiency of forced enemata containing one-half a drachm to a drachm of nitrate of silver dissolved in two or three quarts of water, and further experience has corroborated all that I said. Indeed, from time to time have appeared papers in the medical journals proposing the treatment as both novel and efficacious.

In acute dysentery, involving the colon high up, I have found large enemata, containing two to three drachms of subnitrate of bismuth, much more efficient than the exhibition of bismuth by the mouth. When the symptoms are severe, this local treatment may often be preceded with advantage by washing out the colon with large quantities of cold water. I have never used injections of nitrate of silver in acute dysentery, although the effect of the local application of the nitrate in other inflammations of mucous membranes would justify trial of the remedy. I have seen, in one or two cases, large enemata of very hot water injected without affording relief, and believe that hot water enemata are, in their ordinary results, not at all comparable with large injections of ice-cold water.

When the lower part of the colon is affected, the local use of ice sometimes has an almost marvellous effect. I have, indeed, seen the whole aspect of a very severe and alarming case, in which the symptoms indicated that the colon was affected high up, changed in a single hour by the continuous use of *ice suppositories*. While it is not necessary to have the pieces of ice entirely regular in shape, care should be exercised that no sharp edges are left. The suppositories should be rapidly used, one being put into the rectum every three to five minutes, so as to get, for at least half an hour to an hour, the effect of the continuous application of cold.

When the tenesmus is very severe, iodoform suppositories are often much more efficient than opium in bringing relief.

A remedy which has been from time to time recommended very highly in dysentery, but has not, I think, been much used, is ergot; and when the passages contain large quantities of blood, or are nearly pure blood, the extract of ergot would seem to be indicated. I have never myself used ergot by the mouth in these cases, but have employed suppositories containing twelve grains of extract of ergot and four grains of iodoform, used every two hours until four or five suppositories had been taken with, seemingly, great advantage.

I do not mean to advocate the local treatment of dysentery as a substitute for the use of mercurials, purgatives and ipecacuanha, etc., but as a very important adjuvant to the older forms of treatment. Nevertheless, in my experience, the effect of local remedies has been more prompt and decided than that of drugs given by the mouth; but in cases of any severity the attack upon the disease may be made from each end of the mucous tract.

As illustrating this method of treatment, I give brief outlines of two cases seen very recently.

CASE I.—I was called to a middle-aged lady early in the morning, with the statement that the day before she had had some pain and diarrhœa, and that in the latter part of the night she had been worried by very frequent discharges from the bowels, accompanied with great tenesmus. The passage I saw was chiefly mucus, free from blood. Ice suppositories were applied steadily for half an hour with marked relief. The use of five-grain iodoform suppositories then sufficed in two or thee hours to arrest all symptoms.

CASE II.—This was also a middle-aged woman, an habitual patient of my own, who had been suddenly seized with violent abdominal pain and diarrhœa four days previous, during my temporary absence from the city, and came under the care of another practitioner of repute, by whom she was treated with mercurials, etc., *secundum artem*. I was sent for about 6 A.M., and found her in a condition of marked prostration, suffering from great tormina and tenesmus. She had had during the night six passages which were said to have been of

the character of the one shown me. This consisted of about a teacupful of blood, mixed with just enough sero-mucous liquid to prevent clotting. Calomel was ordered by the mouth in one-sixth grain doses. Ice suppositories were freely used for half an hour, with great immediate relief to pain, and were followed at once by suppositories containing five grains of iodoform and twelve grains of extract of ergot, given every hour until four were taken. Two hours after the commencement of the local treatment the passages were free from blood. By afternoon the patient was without any abdominal distress, and the bowels were quiet; but during the night the calomel produced several characteristic fæcal discharges, containing a few scybala, on account of which a dose of castor oil was given. The operation of the oil ended the case so far as abdominal symptoms were concerned, and in sixty hours after the commencement of the treatment the patient had a normally-formed fæcal passage.

TESTAMENTARY CAPACITY: A PROTEST AGAINST THE PRESENT METHODS OF DEALING WITH THE WILLS OF THE INSANE, FROM A MEDICO-LEGAL STANDPOINT.[1]

By Robert H. Chase, A.M., M.D.,

Physician-in-Chief, Male Department, State Hospital for the Insane, Norristown, Pa.

Judging from the many legal contests of wills, none of the laws of the land have caused more perplexity than those which presume to regulate the uncertain relations between the testamentary act and the objects of its bounty. In the disputes which have arisen between the exponents of medicine and law, the question of testamentary capacity has become confusion worse confounded owing to the absence of any universal criterion. Medical men assume that it is their function to interpret the various phases of insanity, and that on their opinions the decision should depend which determines the limits of the responsibility of the patient. Lawyers, on the other hand, belittle such claims of physicians and assert that it belongs to them to say what the law calls insanity. But over and above all comes the *ipse dixit* of the judge. With an eye single to "sacred precedents," he gives utterances to judgments that frequently betray more of the darkness of the middle ages than the progressive tendencies of modern thought. Some of the theories of these legal lights appear to be not only founded in injustice and superstition but are absurd in their practical application.

The purpose of all law should be the approximate attainment of perfect justice. But is it not obvious that many judges and jurists have greater concern for perpetuating some ancient rule of law than for enforcing pure justice and

[1] Read before the Association of Medical Superintendents of American Institutions for the Insane, Washington, D. C.

equity between their fellow-men? They are generally such sticklers for time-worn usages that they make burdens doubly hard to bear and carry the rulings of their predecessors to such extremes as would doubtless astonish the original enunciators of them. They would rather aid, it would seem, in continuing a rule which at the present day might appear to all others unjust, than strive to ameliorate the harshness and sometimes cruelty which too often found place in the jurisprudence of a former age. The days have gone by when private rights should be destroyed by the mere fiat of a judge. We are wearied with the technicalities and old doctrines of law. The people demand natural justice without unnecessary refinement.

All law should be founded in common sense. When a judge, however learned, departs from this principle, he treads at once on slippery ground. Statutes, in many instances, by reason of their generality, must need work hardship to certain litigants. It has been found impossible to enact specific laws which will insure absolute equity in every case arising under them. It is evident, then, that it should be the duty of our courts, in the exercise of their high prerogatives, to substitute for the strict letter, in such cases, the spirit of justice in the law, and not to use sophistry to sustain technical points, regardless of the equity of the cause.

Yet it is urged that all law is founded upon justice and common sense. This may apply to portions of it, especially when first propounded. But many of its rules have since been sadly perverted. That most of the decisions of the present day are sustained by precedents cannot be denied. That no one but a lawyer can find anything that is fair, right and equitable in a portion of them is equally certain. It is encouraging to note, however, that several of the highest courts in the different States are breaking away from subserviency to the practice of bygone times, and are softening to a great extent the rugged rules of former incumbents of the bench.

These remarks are especially applicable to testamentary capacity. Every person, having property to dispose of, should make his will when mind and body are in a sound and healthy condition. It is doubtful if, even in the most normal states of the mind at the hour of approaching death, the intellectual status of the individual is at its full clearness and vigor. At such a period one is in ill condition wisely to dispose of the accumulations of a lifetime. Nevertheless, too many, through some innate dread of death, postpone this duty until life is rapidly drawing to a close, when the physician, the minister and the lawyer are hastily summoned.

As many wills have been made under precisely these conditions, the act by degrees has come to be regarded by those given to superstition, as one clothed with great sanctity. Indeed, until recent times, he who attempted to set a will aside, made under such circumstances, was deemed guilty of little less than sacrilege.

This feeling was largely fostered by the priesthood of the middle and later ages, who too often were the greatest beneficiaries under testamentary rights. Hence, not infrequently, they resorted to undue violence, threats, fraud, and even force, to accomplish their designs.

A prominent physician and writer, after giving the formula, as laid down by numerous authorities, which is, to say the least, somewhat startling to "the inexpert," that "a man may be capable of making a will and yet incapable of making a contract, or to manage his estate," says, in reference to an important decision of the Supreme Court of Maine, that "this case, recently decided after a prolonged litigation, is calculated to excite serious reflections in the minds of all who are accustomed to regard the testamentary act as too sacred to be disturbed by any other than the strongest evidence of incompetency."

In this case, the testator, who was partially demented, becoming piqued at some trifling matter, willed all his property from his only child (a daughter) to a distant relative. Upon trial at *nisi prius*, the jury found for the daughter, and pronounced that the instrument produced was not a legal and valid will. Yet the medical authority above quoted declares this as "an extraordinary verdict." But the Supreme Court of Maine, be it said to its commendation, greatly differed from him in this opinion.

It would seem as if this humane physician might better have bestowed his pious sympathy upon a child brought up in comfort and luxury, who may have been left destitute by the mere whim of an eccentric parent, than to have vented his spleen upon the court in deviating from an unjust rule.

It clearly appears that by far too liberal rights have been granted to testators. The Romans, who prohibited this injustice under their civil law, were wiser in this respect than ourselves. But it is gratifying to learn that the legislatures of several of our States are materially restricting this power. There is no question that a man who has made his own fortune and who dies without leaving a wife, children, or other immediate relatives, should be permitted to dispose of his estate according to his own pleasure. But when he leaves a wife, who in many cases has aided him in the accumulation of his wealth, or children for whose happiness and prosperity, and indeed for whose actual being he is responsible, such obligations should not be lightly swept aside. As generally in the case of the wife, he should be legally restrained, also, from diverting his property from his children to other sources, except for the best reasons—reasons that would be pronounced sufficient by a competent court of equity.

If this be a proper view of the question, how much more should the testamentary dispositions of a person, whose mind is partially impaired, be carefully scrutinized if in any particular they deviate from what is strictly right? In one instance, a man who had for a long time been called, at least, eccentric, and who was clearly of unsound mind at the time of the signing of his will, disinherited his only son who had always been to him obedient and faithful and had substantially assisted him in making his money, because the son, becoming embarrassed financially, had made a just and honorable assignment of all his effects for the benefit of every creditor, instead of unfairly and dishonestly conveying his property to the testator. Yet the courts sustained the will! Comment is unnecessary.

The primitive rule that no man should be counted a natural fool, and, therefore, incompetent to make a good will, who was able to measure a yard of cloth, or to name rightly the days of the week, or to beget a child, is still very

generally adhered to by our courts. The presumption is nearly always in favor of the testator and the will; the burden of proof upon him who has the temerity to impugn it. A noted English judge says: "When the testator is known to possess this necessary capacity (although of such low degree) it is sufficient to establish his will, no matter how arbitrary its provisions or how hard or unequal may be its operations on his family." In other words, a man incapable of buying or selling a horse, a cow, or a cord of wood, may, under the influence of pride, pique, remorse, superstition, or of a young and second wife, cruelly deprive his children of their just inheritance.

As to the influence of remorse, I recall a case (in which I knew some of the persons concerned) decided years ago by the Court of Appeals of the State of New York.

The testator, although a church member and ostensibly a farmer, belonged to the worst class of usurers. He disobeyed the laws of both God and man. The statutes against usury at the time in that State were very stringent, but he succeeded in evading them. He would delude his victims into paying all that was possible for them to do on mortgages which he had obtained or "shaved" at much less than their actual value. When his creditors were sufficiently reduced to gratify his avarice, he would take advantage of the mortgageor's condition, foreclose and bid in the farm at half its worth. If that did not satisfy the demand, he would sue on the bond and seize all the personal property of the farmer.

Thus he became rich; but as death approached, remorse with all its terrors drove him nearly frantic. He was surrounded by ministers of his own denomination, who urged him to devote his wealth, not to the reimbursement of his victims, but to increase the endowment of a theological seminary. To this intent he willed his money, thinking thereby to secure an abode in heavenly mansions. But his mercenary project was frustrated by the Appellate Court, which awarded the estate to his daughter and sole heir-at-law.

In an interesting case found in the English reports (Greenwood *vs.* Greenwood), the decision of Lord Kenyon illustrates in a marked degree how the anxiety of many judges to sustain old precedents may lead them into much folly.

In this instance the testator, while sick with a fever, conceived the idea that his brother had administered poison to him in his medicine with evil design. He recovered from the attack, except that the delusion never left him; and it showed itself in his will, by which he disinherited his brother, who was his sole next-of-kin. Lord Kenyon took special care to distinguish between an act founded on a prejudice, however unreasonable and false in fact, and an act based on an insane delusion. He held that the will in question, if it originated in the former motive, could not be impeached. After remarking that the conduct which the deceased displayed toward his brother was nearly unaccountable, he continued: "But if his mind remained entire, if he had new raised-up prejudices against his brother, though upon improper grounds, yet if they were such prejudices as might reside in a sound mind * * * * hard as the case may be, it is better that a thousand hard cases should take place than that we should remove landmarks by which man's property is to be decided."

What can be said in defence of such absurdity? This great judge seems to have taken the view that courts of equity were not established to maintain the just rights of the people and to bestow on them the beneficial results of a wise and liberal jurisprudence, but instead for the sole purpose of upholding the ancient landmarks of law, whether just or unjust. Better that "a thousand hard cases should take place" than that these sacred, ancient and revered "landmarks" should be disturbed! Better that thousands should suffer unjustly than that these antiquated rules should be modified in the shifting conditions of progress! Furthermore, be it remembered that this opinion was given in a case when the prejudice first arose under an insane delusion, which, as the lawyers themselves admit, furnishes sufficient grounds for impeaching a will. Yet, although founded in an insane belief, if it be such a prejudice as a sane man might hold, the will must be sustained. Can one doubt that such sophistry is liable to cause contempt of court in a sense not usually applied?

All authorities are agreed that no person of a totally unsound mind can execute a valid will; but under what is termed partial insanity, the decisions are exceedingly various as to what constitutes "a disposing mind and memory." On the one hand, certain judges have adopted the formula which an able exponent expresses as follows: "The prevalent idea is that in order to constitute testamentary capacity, the intellect of the testator should be in a perfect state of integrity and possess all its original force and vigor." Some have been guided by the condition that the testator must have sufficient mind to comprehend what property he possesses, what disposition of it he wishes to make, and who are his heirs-at-law. Other judges, however, have shown a tenacious proclivity to adhere to the antiquated, illogical precedents already pointed out.

Writers on medical jurisprudence have defined the various phases of a diseased mind under the heads of insanity, mental derangement, dementia, imbecility, partial insanity, monomania, etc.; but these terms, as has been pertinently said, "simply describe a sliding scale of mental disorder or enfeeblement, expressing different degrees of deterioration, and are subject, therefore, to whatever interpretation the mind of the observer may choose to give them." It has been impossible to find any single test of mental disorder, as medical authors have long since confessed, notwithstanding the persistent effort of the courts to adopt certain criteria from time to time which have given way to other standards equally unreliable. Insanity is a disease, or rather class of diseases, of such variable phases that no symptom, or group of symptoms, is of sufficient diagnostic value to establish its existence. Consequently, testamentary capacity, when the question of insanity is raised, should be determined by the evidence educed in each particular case. Any single standard by whose imperfect gauge a judge may seek to measure the intelligence of men is as arbitrary as the bed of Procrustes.

It has been held that a person suffering from partial insanity may make a valid will, provided his mania does not relate to or have a bearing upon the bequests that he desires to leave. This at first sight may seem just, but it cannot be safely followed indiscriminately. Even in the insanities most limited in their manifestations, such as a monomania, for example, where the symptoms

may be confined to a feeling of bien-etre and a single delusion, it may be found upon examination that the entire nature of the subject is tinged with an hereditary taint or a constitutional mental warp which has influenced for evil, perhaps, his whole life.

Just as the nervous system is the central unifying organ of the body, so all the varied mental phenomena are brought together into a unity in consciousness. The processes of the brain being intimately associated and co-ordinated, it is not difficult to conceive that as derangement of portions of its mechanism is apt to involve, to a greater or less extent, other parts, so it may be attended with disturbances of the normal co-existing operations of the mind. The ancient belief that the human mind is infinite in its powers, and, to a certain degree, divine, seems almost justified in the light of the past in the magnificent achievements and the marvellous productions wrought by the hand of man. But, while possessing such illimitible force, it is, on the physical side, sensitive, delicate and subject to numerous dangers. A slight injury or disease of certain regions of the cerebral substance is liable to turn its purpose from the direct course into eccentric channels. Again, a perturbation, whatever be its material substratum, manifested in a morbid state of the attention, or in a defect of the relations of objective and subjective consciousness, or in the logical apparatus, may deflect the mental vision out of the plane of healthy thought and action.

In former years, that noble champion of human rights, Henry Brougham, while Lord High Chancellor of England, held, in opposition to his predecessors, radical views. He insisted that the human mind is an unit, and that any impairment of a single faculty is an impairment of the whole intellect and destroys the testamentary capacity. In this doctrine he was sustained by several distinguished judges of England; and for a while it appeared as if the rule of Lord Brougham would be generally adopted. But other lord chancellors unfortunately have been guided by the older decisions. Some of our American courts, be it said with praise, have followed what we cannot but regard as the better practice. If a certain part of the brain functionates insanely, who can say to what extent the remainder is being undermined and laid waste, so as to permit the insidious enemies, passion, prejudice, delusion, revenge and superstition, to gain abnormal possession of the citadel?

Finally, the following conclusions are submitted:

(1) That the harsh, cruel and unjust decisions of the old English courts respecting wills should cease to enter into our system of jurisprudence.

(2) That a parent should be prohibited, as by the Roman law, from disinheriting his own children except for ample reasons, the soundness of which should be satisfactory, under the law, to a court of justice.

(3) That the standard of testamentary capacity should be sufficiently broad to permit of each case being tried upon its merits.

(4) Lastly, that no person unfit to make a contract by reason of any tincture of lunacy should be allowed to dispose of his property by will; and further, that the rule should be construed with especial strictness when the bequest deviates from that which is fair and equitable. Our general statutes, controlling the disposition of the estates of those dying intestate are wise, just, beneficent and far superior to any provisions devised by one of unsound mind.

DISINFECTION: ITS PRINCIPLES AND THEIR SUCCESSFUL APPLICATION IN PRACTICE.

By Seneca Egbert, M.D.,

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Certain circumstances of late have caused me to think that a practical knowledge of the principles which underlie efficient disinfection is not so widely possessed by the medical profession throughout the country as one would suppose, or as it should be. The importance of having this knowledge, and of using it, cannot be gainsaid. We have only to think of the wonderful results that might be secured to humanity to realize the importance of thoroughly disinfecting, in so far as we are able, all substances or media that may possibly carry the germs of any contagious disease coming under our care or notice. And if to this we should add systematic instruction to the laity on the subject, and impress upon them the grave importance of it all, who can tell how rapidly these diseases would cease to be epidemic or endemic, and pass out of existence? To aid in this work, then, I venture to give the following extracts from a lecture on disinfection, delivered to the first-year medical students, at the University, during the past session.

To comprehend the subject thoroughly, it is necessary that I should first refer briefly to the distinction between the two main classes of diseases and to the functions and limitations of prophylaxis. Diseases are divided into two classes, considerably different in their origin, nature and character. The first arises within the body through some alteration or disturbance of nutrition and assimilation, and are called autogenetic; their causes do not come from without, though there may be external predisposing or aggravating conditions. The second class comprises those which are due to a cause from without, favored, it may be, by either external or internal predisposing conditions, but of necessity depending on the reception or inoculation of the special cause, which cause has the power of reproduction and development, of vitality and virulence. Such diseases are called contagious, infectious, specific or zymotic.

Prophylaxis is "the use of hygienic or other precautions conducive to the prevention of disease," or it may be defined as "a series of methods or procedures whereby disease is restricted and prevented by suppressing or removing its predisposing conditions, and destroying or modifying the exciting causes."[1] Its first function of suppressing or removing predisposing conditions is accomplished by sanitation. The second, that of destroying or modifying exciting causes, is carried out by disinfection. The words "*predisposing conditions*" are used instead of "*predisposing causes*," because these conditions can never in themselves originate a disease, although they do make the system more susceptible to the exciting causes of disease.

[1] J. W. Byers, M.D., in Keating's Cyclopedia of Diseases of Children, Vol. IV.

As we have, as yet, very little definite knowledge of the real nature of the exciting causes of the autogenetic diseases, they being developed and elaborated within the body, our employment of prophylaxis in the prevention of these diseases is but partial and confined mainly to sanitation ; but it must be remembered that much may be done by sanitation, as in the selection of proper diet, clothing, climate, etc., and that in some instances what is practically disinfection may be advantageously employed. But it is in the prevention and restriction of contagious diseases, the causes of which are demonstrable without the body, that we can employ prophylaxis with greatest success, and that disinfection is especially indicated. Sanitation is the defensive—disinfection the aggressive part of prophylaxis.

To remove and suppress predisposing conditions and to prepare the body to resist and repel the action of exciting causes, we must not only strengthen its resisting powers, but make all external media as favorable to it and as hostile to the exciting causes as possible. The resistant powers of the body must lie in the individual cells of the body, and it is but natural to suppose that this repellant action to noxious substances is best performed when the cells are in most perfect health and most vigorous. We know that purity of external media, as of air, water, etc., is essential to the health of the body and its component cells, and that conditions of impurity in these media predispose to disease. We also know that a proper and sufficient supply of wholesome food is essential to health, and that certain other factors, as sex, age, clothing, climate, etc., may or may not predispose to disease. In other words, if we strengthen the resisting powers of the system to the fullest extent and remove all predisposing conditions, in all probability the exciting causes will be inoperative, and there can be no incurrence of disease. This is the essence of sanitation : to secure perfect health, to increase the inherent power to resist noxious and harmful influences, and to make all the surroundings and environments of the body pure and free from depressing factors. This applies equally to both classes of disease ; for with healthy cells and proper food, there will not be faulty nutrition and assimilation, and the consequent production of the exciting causes of the autogenetic diseases ; and with vigorous resistance and pure surroundings there is little hope of the germs of the infectious maladies gaining a foothold within the system long enough to reproduce themselves and cause their respective diseases. The best means of preventing disease, then, is to learn and apply the best means of attaining and retaining a healthy and vigorous state of the system,—to observe the laws of hygiene.

Disinfection is that part of prophylaxis which is concerned with the destruction or modification of the exciting causes of disease. A disinfectant is "an agent capable of destroying the infective power of infectious material ;" and disinfection, strictly speaking, has only to do with the use of such agents in proper quantities.

However, an important function of disinfection, as commonly understood, is the removal or destruction of filth and all matters favorable to the growth of micro-organisms, and this is not comprehended in the strict definition. It is only in the popular sense that its meaning includes the use of antiseptics and

deodorants. An antiseptic is "an agent to arrest putrefactive changes," or "an agent which retards, prevents or arrests putrefaction, decay or fermentation." It does not necessarily kill the micro-organisms on which the processes depend; and though some antiseptics may do so, all do not, and they cannot be considered or used as disinfectants as a class. But though pathogenic and saprogenic bacteria are not identical, experience shows that whatever will act as a true disinfectant in destroying the vitality and infective power of the former will do likewise to the latter, and is, therefore, an antiseptic. Again, to deodorize is not to disinfect. Many deodorants are not disinfectants, and some of the best disinfectants, as the bichloride of mercury, have no deodorizing powers.

Masses of putrefying matter may not, in some cases, contain disease-germs and may be even hostile to them; but in general the reverse of this is true, and decaying matter often furnishes a good field for the increase of pathogenic organisms. The noxious gases given off to the air, and the poisonous alkaloids to the drinking water from such masses, may also do much harm by depressing the system, lowering the vitality and acting as predisposing conditions to the incurrence of such "filth diseases" as cholera, yellow fever, typhoid fever, diphtheria, etc. So the removal of such accumulations, while not strictly disinfection, becomes part of the duty of a disinfector. Where neither time nor opportunity is given for the removal of such nuisances, the putrefactive or fermentative processes may be checked, temporarily or permanently, by the application of suitable antiseptics. In this way, sulphate of iron, a good antiseptic, but not a disinfectant, is of value; for it is cheap and can be used in large quantities in drains, cesspools, etc.

We determine the value of any substance as a disinfectant from the accumulated experience of practical sanitarians and from experiments on susceptible animals, and in suitable culture-media with infectious material treated with the agent in question. The knowledge thus gained must stand the tests of scientific deduction, and a substance is not a disinfectant simply because in any given case infection did not occur after its use. As Sternberg says, "Negative evidence should be received with great caution;" but if the experience of practical sanitarians be confirmed by careful cultivation and inoculation-experiments, our knowledge of the value of any agent becomes more definite and our practical work more exact. From these inoculation and culture experiments, it has been found that the infectious germs of different diseases vary in their power to resist the different disinfectants; but, nevertheless, it may be stated that, "In the absence of spores, a disinfectant for one is a disinfectant for all." Consequently, we are able to simplify our list of disinfectants and to make more effectual use of them. The reader will note that there is nothing in the tests mentioned to disprove the efficacy of disinfectants, whatever the nature of the infecting material and whether the germ theory be accepted or not. Accepting the germ theory as proved, however, some bacilli reproduce themselves by means of spore formation, which spores have the power of resisting heat or other disinfectants to a much greater degree than have the parent bacilli or the non-spore-producing organisms. Some agents that are effectual against all other organisms completely fail to destroy the vitality of spores, and thus our list of

disinfectants available in *all* cases is still further reduced. In the case of a non-spore-producing disease-germ, agents may be used that are really powerless against spores; but in doubtful cases those only should be used which we know have the power of spore destruction. The reliable and practical disinfectants at our command are:

I. Those that destroy spores—(*a*) fire; (*b*) steam, under pressure (twenty-five pounds); (*c*) boiling water; (*d*) chlorinated lime (in solution); (*e*) mercuric chloride. II. Those effective in the absence of spores—(*a*) dry heat (250° F. for two hours); (*b*) sulphur dioxide (SO_2); (*c*) carbolic acid; (*d*) copper sulphate (in solution); (*e*) zinc chloride (in solution).

Of the above agents fire is the most efficacious, as it destroys all organic matter; but it can only be used to disinfect articles of little value. As a rule, it will cost more than they are worth to disinfect by other means old clothing or bedding that has been used in an infectious case; consequently, it is best to burn them.

Steam from boiling water in an open vessel has only a temperature of 212° F., or even less, but under twenty-five pounds pressure its temperature rises to 240° F., and it is effective against the most resistant spores almost immediately. Moist heat at 230° kills spores in twenty minutes. In the absence of spores bacteria are killed by hot water below the boiling point, and it is safe to say that boiling for half an hour will kill all known disease-germs, including anthrax spores, though spores of certain harmless bacilli resist boiling for several hours. Chlorinated lime, popularly known as chloride of lime, is one of the best and cheapest disinfectants. It should contain at least twenty-five per cent. of available chlorine, should be kept covered from air and moisture, and fresh solutions should always be made as needed. Its power is due to hypochlorite of lime, which is freely soluble in water and readily decomposes in contact with organic matter, giving up chlorine gas, a most powerful disinfectant. "Germs of all kinds, including the most resistant spores, are destroyed by this solution; but it must be remembered that the disinfectant itself is quickly decomposed and destroyed by contact with organic matter, and that if this is present in excess, disinfection may not be accomplished, especially when germs are embedded in masses of material which are left after the hypochlorite of lime has all been exhausted in the solution." Labarraque's solution (of chlorinated soda) is a fair disinfectant, but does not keep well, and chlorinated lime is equally as good and much cheaper. However, the soda solution has scarcely any odor and makes a pleasant disinfecting bath for the person. It must contain at least three per cent. of available chlorine. Bichloride of mercury is one of the best germicides that we have, and is effective in comparatively weak solutions. It corrodes metal, and so cannot be used to disinfect waste pipes, etc., and it combines with and coagulates albumin, which interferes somewhat with its action. This coagulation is, I believe, prevented somewhat by the addition of tartaric acid to the disinfecting liquid. It must be remembered that, with all disinfectants, time is a necessary factor in securing the desired effect, and that it does not disinfect an article to subject it to even a strong corrosive sublimate solution for only a few seconds.

Dry heat, to be effective, must be of such a high temperature that it will injure many fabrics. Moreover, its penetrating powers are very slight, and considerable time must be allowed for its action. It is only to be used where moist heat or solutions would be injurious to the articles to be disinfected. Spores require a temperature of 284° F. of dry heat for three hours; bacilli without spores, 230° F. for two hours. Sulphur dioxide (SO_2) is one of the best gaseous disinfectants, and is especially useful in fumigating rooms and articles that cannot be subjected to steam heat or solutions. It probably kills all germs not containing spores, acts best in the presence of moisture and in rooms as nearly air-tight as possible, and is practically the only means we have for disinfecting the atmosphere, just as heat is ordinarily the only agent we can use in sterilizing our food and drink. Carbolic acid is effective in the absence of spores, and, according to Koch, should have the first place in disinfection against the cholera germ. For excreta, it is to be used in a five per cent. solution; for clothing, etc., in a two per cent. solution. Copper sulphate is a good disinfectant in the absence of spores, is a deodorant, and is cheap. It may be combined with the mercuric bichloride to color the solution and to get the benefit of its deodorizing powers, which the latter does not have. Zinc chloride is a good antiseptic and deodorant, but is not a very powerful disinfectant. A five per cent. or ten per cent. solution will usually kill germs without spores. Other agents have been suggested as disinfectants from time to time, but most of them fail to fulfil the conditions imposed by the practical sanitarian and the bacteriologist. One of the most important of these recently suggested is the peroxide of hydrogen, which certainly is a valuable antiseptic and promises to be worth much also as a local disinfectant for the body.

The National Public Health Association offers the following recommendations as to the use of the above agents under varying circumstances:

For excreta.—(*a*) In the sick-room, chlorinated lime, four per cent. solution; in the absence of spores, carbolic acid, five per cent., or copper sulphate, five per cent. solution. (*b*) In cesspools, $HgCl_2$, 1 in 500, or carbolic acid, five per cent. solution. (*c*) For the disinfection and deodorization of masses of organic matter, as in privy-vaults, etc., chlorinated lime in powder.

For clothing, bedding, etc.—(*a*) Soiled underclothing, bed linen, etc., destruction by fire, if of little value; boiling for at least half an hour, or immersion in $HgCl_2$, 1 in 2,000, or carbolic acid, two per cent. solution, for four hours. (*b*) Outer garments of wool and silk, and similar articles, which would be injured by immersion in hot water or disinfecting solutions, exposure in a suitable apparatus to steam under pressure for ten minutes, or to dry heat (230°) for two hours. (*c*) Mattresses and blankets, soiled by discharges from the sick, destruction by fire, exposure to super-heated steam for ten minutes (mattresses to have covers removed), or immersion in boiling water for half an hour.

For furniture and articles of wood, leather, porcelain, etc.—Washing, several times repeated, with a two per cent. carbolic acid solution.

For the person.—The hands and general surface of the body of attendants and of the sick and convalescents should be washed with a ten per cent. solution of chlorinated soda, diluted 1 to 10, a two per cent. carbolic acid solution, or $HgCl_2$, 1 to 1,000.

For the dead.—Envelop the body in a sheet thoroughly saturated with a four per cent. chlorinated lime, or five per cent. carbolic acid solution, or $HgCl_2$, 1 to 500.

For the sick-room and hospital wards.—While occupied, wash all surfaces with a two per cent. carbolic acid solution, or $HgCl_2$, 1 to 1,000. When vacated, fumigate with SO_2 for at least twelve hours, burning at least three pounds of sulphur for every 1,000 cubic feet of air space in room; then wash all the surfaces with one of the above solutions and afterward with soap and hot water; finally, ventilate thoroughly.

"Generally, in the absence of spores (and no human disease has any as far as we know), heat of 250°, SO_2 in fumes, and solutions of mercuric bichloride will destroy all pathogenic germs."

I ought to call attention to the importance of thoroughly disinfecting or destroying *all* sputa and excreta from tubercular patients, and any clothing or articles contaminated by the same. If this were done religiously by all so affected, a long stride would be made in the advance of preventive medicine against this most destructive of diseases. Small paper cups are now sold at low cost, in which the sputa is to be received and which can be burned, and all the contained bacilli thus destroyed at the end of each day. The use of any such contrivance is to be strongly recommended by the profession.

In conclusion, I wish to acknowledge my indebtedness for much of the above to the article on Prophylaxis in Keating's Cyclopedia of Diseases of Children, by J. W. Byers, M.D., to the Lomb Prize Essay of Dr. Sternberg (1886), on Disinfection and Personal Prophylaxis, and to Rohé's Text-Book of Hygiene, 1890.

I trust that there are many to whom the principles and suggestions for practice here laid down are trite; there are some to whom they may be at least partially new, and these, I hope, may derive some help and benefit from what I have tried to put in the simplest and most practical way. It is better and easier to prevent disease than to cure it; each infectious case becomes a focus of origin for many more; it may be criminal to allow these latter ones to occur.

HINTS ON THE MANAGEMENT OF MENTAL DEPRESSION, ESPECIALLY IN MEN.[1]

By J. Madison Taylor, M.D.,

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What I shall have the pleasure of saying to you has chiefly a practical bearing, and is warranted by the importance of rightly interpreting our duties

[1] An address delivered by request before the Stillé Medical Society, University of Pennsylvania.

as medical advisers to those who suffer from mental depression. The states which justify the use of this rather loose term are so common and various that they are too often regarded as mere incidents in the course of more obvious maladies; and, in truth, the cure of these may entirely dissipate the mental cloud which hangs about their victims. Now and then, this loss of mental balance or acuity of judgment is of most serious moment; in fact, while possibly not conspicuous to any but the closest observer, it may yet prove of gravest consequence to the sufferer. It is the plain duty of the medical adviser, even though he be not instructed as an alienist, to wisely handle this complication; to get as nearly as he can upon his patient's standpoint, to disentangle his erring judgment and set right the faulty aspect from which he views life. If this be not promptly done, evil mental habits may develop into, or strongly simulate, insanity. Indecisions and misconceptions may grow into grave disorders of will, imperilling not only the usefulness of the person as a citizen, but bring to the verge of calamity those who are dependent on his actions.

It may be that all of us have seen follies of far-reaching kind committed by those whose power for determining choice is temporarily suspended. Unfortunately neither law nor custom justifies interference on the part of interested beholders. The law hedges about the free and independent citizen with numberless safeguards, in acting as seems to him best, be this ever so unwisely or hurtfully.

Hazardous, indeed, is it for the family of such to place limitations on the doings of even the clearly insane. When, however, the consciousness of this lack of forming right purposes leads a man to seek medical guidance, the advisor has need for all the resources of his science and his art. Causes near and remote must be eliminated, and that ever-enlarging problem presents itself of readjusting the human creature, when out of unison, to his environment.

I have felt it might be useful to relate certain of the methods and conclusions of one who has been very often called upon to meet many puzzling situations which arise in the treatment of aberrant minds and volitions. Little is taught in the text-books other than generally, hence illustrative incidents will aid in preparing you to act in similar emergencies.

Unnumbered causes tend to jostle one from his proper mental equipoise; and so insidiously do they arise, it is of value to have one or more watchful friends who may help to put a man upon his guard at times against himself.

Some of these agencies are large and obvious, such as exhausting illness, diathetic disturbances, convalescence after acute disease, and the lesser causes as accidents, some traumata and pressure of adverse circumstances. These, or several combined, should be looked to in explaining that phase of mental disorder which I have called depression. I do not mean only to speak of mild melancholias, but rather conditions of overanxiety, which manifest themselves in a person otherwise sound in mind. Such excessive solicitude may be because of some one symptom which really is present; hence I also wish to exclude hysteria, in so far as that is the gratuitous assumption of symptoms which do not exist. I choose, rather, to speak of those conditions which are manifestly present, but upon which the sufferer finds his judgment notably warped.

This making too much of the significance of a symptom or group of symptyms is, indeed, a phase of hysteria, and hence what I have to speak of might technically be classified under that head. Alienists are so eager to refine upon their already elaborate classification that it is difficult to employ single terms which are not used by them too rigidly.

Among the most potent complicating causes of mental ill health are the remnants of former disease; ghosts which have not yet been laid. In women there is larger ground for nervous disturbance, either of genuine hysteria or hysterical states in the disordered condition of their generative organs. Most of these, by the way, can be made well by simple attention to nutrition and suitable rest or exercise, as they belong to the one or other class into which women may be divided, namely, those who do too much and wear themselves out in needless effort, or those who do too little and are really afraid of doing that, and who must be taught their duties. In short, the causes capable of disturbing the nervous equilibrium of a woman are legionary in number, and into these it is not my purpose here to enter. Among men we have to look for more serious factors, competent to disarrange their mental faculties. Perhaps the one which the general practitioner has most often to meet is cerebral exhaustion, and the nerve-tire, which comes from worry, or the wear and tear of striving competitions.

The psychical causes are less numerous, and can generally be reduced to disappointment, such as from love affairs or vaulting ambition. The over-long strain of business responsibilities not only disturbs the mind, but not seldom completely suspends the exercise of sound judgment, or at least inhibits the capacity for sustained mental effort. Among Western men this is a common history. With them so great and cruel are the competitions that among the rising men in large cities or business centres, a youth at 17 or 18 years is carrying responsibilities which in the East would scarcely come upon him until the age of 25 or 30; by 20 or 25, this same man is often in business for himself with ever-widening responsibilities; by 40, it frequently happens that he has laid by a fortune, and when minded to take his ease, and in the full tide of vigor, snap goes the overstrained vital tension, and the poor victim falls in a heap, like "coming a cropper" in the hunting field. This breakdown is peculiarly sad, and likewise exceedingly difficult to repair. It seldom arises until abundant warning has been given both by his own consciousness and by medical advisers. When it finally culminates, it is too often irreparable. At least, many years and judicious modes of living are required to rehabilitate a vitality which has been thus wofully overtaxed.

As a corollary to these causes, there is that powerful agent, the American disease, nervous dyspepsia. A long course of hasty breakfasts, early trains and counter-luncheons must inevitably leave their mark upon the digestive tract. It will be a distant day, indeed, before the American learns to have sufficient respect for that much-suffering organ of such astounding recuperative power, the human stomach. Mere disturbance of the stomach, however, while in itself capable of causing a great deal of mental depression, is not so potent for evil as intestinal disturbances. Here is the ground for an immense amount of functional perturbation of more organs than those naturally allied to it. Lauder

Brunton describes a form of toxæmia, which he cleverly calls "internal sewage poisoning;" whence into the very blood go these alkaloidal poisons, the by-products of digestive waste. The remoter viscera through the sympathetic nerves are thrown out of symmetrical activity by this poison circulating in the blood. The blood itself becomes disorganized and anæmias result. The judgment or symmetrical action of the higher cerebral processes is peculiarly liable thereby to suffer. When this has occurred several times, and faulty judgments have been demonstrated to the sufferer, a mighty fear possesses him, lest his reason be going, and one evil impression superadded to another makes finally a picture of pitiable distress. Another correlated poison comes in for remark here, viz., alcohol. Ofttimes this of itself would be quite insufficient to blame, but when added to those mentioned, is literally fuel added to the flame.

If, to this, the sufferer from already enfeebled elimination and overtaxed strength tries to goad the flagging energies, his folly is swiftly punished.

Alcohol is particularly vicious in befogging the higher cerebral centres. Add to this the reactionary effects on cerebral and other tissues and on remoter waste gates, as the liver and kidney, and he who resorts to drink in such a case treads a dangerous path. He stands in peril like one who is betwixt the devil and the deep sea.

The power of organic disease of heart throwing out of gear the life-blood, the kidney, or the liver, is clearly known and taught.

Certain sources of reflex irritation, as nasal growths, eye and ear faults, are powerful for harm. Less frequently, and hence the more to be watched for, are traumata. This may be the key to a difficult case. Bullet wounds long forgotten, strictures of the urethra, and notably of the rectum, may tell the tale. The blood must be measured for degrees of anæmia and the possibility of poisons acting, such as of malaria, lead, etc., be considered.

In searching about for means of relief, first, it is essential to search into all causes, actual and possible, which have combined to produce these complicated states, to definitely estimate what of organic mischief exists, letting no pathological factor escape recognition. Learn, also, the peculiarities of constitution and early training. Determine from what aspect the patient looks on life, its needs and its duties. Make sure of a clear separation of the true symptoms, physical and mental, from hysterical states; then lay down a definite plan of campaign, adhere to it unflinchingly, and carry to its legitimate conclusions all issues, ever hopeful of the best results. There will occur many exigencies of the most surprising and disconcerting kind. Here will be constant opportunity for display of that important quality, the measure of which will be your index of fitness to maintain valuable relations to similar cases, namely, *tact*. The medical counsellor needs to be a gentleman in the highest acceptation of that term, manly, forbearing and gentle ever. Of scarcely less importance is firmness, at times the inflexibility of granite, but never obstinate or contumacious. Dogmatic he may often be, for dogma presupposes a right rule of action unflinchingly adhered to. Here, also, will be felt the need of varied cultivation and wide experience of men and places. The key to character is often knowledge of the plane of social life of the one so studied, of the habits of thought formed in homes of luxury or toil.

I have found it best, as a general rule of action, to be very frank and enter as far as possible into the mental attitude, and judge of his troubles from the sufferer's standpoint. I go with him into the details of his symptoms as far as my judgment deems wise, especially at first, and show him that I am his friend and well-wisher. Only thus does it seem to me feasible to rightly interpret the mental symptoms of those willing to speak frankly of themselves. One may thus select the wholesomer tendencies and encourage these, sharply defining and criticising morbid fancies. I am not sure but that in many insane states, also, this course is best, though often taught otherwise by authorities. Where the morbid fancies are observed to recur, these should be more and more firmly excluded from attention, judiciously explaining meanwhile their worth, and in due time forbidding their discussion altogether.

The therapeutics of these disorders of will and judgment should ever begin with attention to the physical well-being, and indeed it not seldom ends there. Environment and companionship come next—change of scene, and, better, repeatedly, supplying, in due time, incentives to thought and action, and always holding out the tactful, helping hand. It may be set down as an almost absolute rule that home is the worst place for such a patient, and one's family the most hurtful companions. After a period of rest and forced feeding, if the organs are greatly disturbed and malnutrition be a feature, while along with this the passive exercises carefully increased, the second great need is shown to be prolonged life in the open air. Exhausted nerve forces, some measure of which may be assumed to exist, are the last to repair after protracted strain. Long months after the organs are working systematically, and the gain in weight and muscle force is ample, it will be found that neither effort nor endurance can be long maintained. The element of time here is the chief factor. Not less than a year, and better, that and a half, or even two, is needed to re-establish the vital forces whose reserve fund has been overdrawn. This time may best be spent leading the life of a savage, enduring hardships and exercising fortitude. The most wholesome stimulus is the pursuit of some manly sport. Athletic games, boating or riding, are very well, chiefly as means to an end. The exercise, however, of that savage instinct which is in all of us somewhere, and may be brought out at some time, namely, the pursuit of game, be it big or little, tends most to strengthen the feeble knees and put joy in the heart of the human animal. I have no need to point to history to sustain my position. Give me but time, and the inquiring spirit in a man conscious of loss of mental and physical balance, but not yet dead to his own true self, and the old savage instincts, however dormant, may be awakened. Once this point be attained, whether the pursuit is of big game, now almost gone, or of birds, butterflies, or even bacteria, this love grows by what it feeds on, and in the very pursuit comes strength.

It has been my good fortune to come at various times into unusually close relationship with certain gentlemen of wide cultivation and refinement who had fallen into conditions of disturbed cerebration, and yet far removed from the state ordinarily regarded as insanity, and who, by reason of this condition, were unfitted for pursuing their ordinary avocations. Each one presented distinct phases requiring a special study and elucidation. There were, however, certain features in common which justify my speaking of them collectively.

In illustration of what I have to say, I will make use of these histories in brief, although it will be entirely unnecessary to elaborate them; nor, indeed, do I care to do so, because the gentlemen, all of whom are friends of mine, would scarcely care to have me do so. After having given an outline history, I will then relate some instance from time to time which will give emphasis to some of the points I have made.

Mr. C., a gentleman of about 40 years or more of age, had lived for many years in China and other Oriental countries. There he was exposed to extremes of heat, and, like most foreigners dwelling in those parts, he became extremely solicitous as to his food and surroundings, probably exhibited a good deal of imprudence from time to time, a too full diet with little exercise; certainly he did get his digestion wretchedly out of shape. There were the usual disturbances, so-called liver troubles, which gentlemen living in the tropics almost always have, or think they have. I believe, indeed, there was a history now and again of jungle fever or some such thing; but to shorten the tale, in an originally very strong and vigorous man, there had been wrought a change in which the chief feature was extreme oversolicitude about his own digestion and bowels. This had gone on for several years. He came under treatment for a progressive loss of flesh and strength; he complained of an immense deal of pain in his shoulder-blades and abdomen more or less constantly. He had reduced his diet to the simplest outline, as of broiled chops and rice prepared with excessive care by his own servant, and a very few other simple foods. He had reduced his exercise, of which he claimed to be exceedingly fond, and, indeed, had at one time been quite an athlete, to merely walking across a room once or twice a day. The journey from a distance was effected with much difficulty, amid groanings and deprecations. At once he received pretty systematic regulation of his diet, careful inspection as to his secretions. No organ was found distinctly amiss, although there unquestionably was a catarrhal state of the intestines sufficient to cause some disturbance.

It was soon ascertained that the main difficulty resided in his will. I may say this gentleman had received very good treatment for these functional disturbances at the hands of his own physician, and it was largely because of the extreme difficulty in disabusing his own mind of faulty impressions that his case now demanded care. As his treatment progressed, he was compelled to regard himself as improved, and urged to increase his efforts at walking. I succeeded in a very short time in gaining his confidence. We chatted quite largely upon the subject of athletics, with which I had had much to do, and for which he professed great fondness, and when in due time I announced to him that he was to take a walk in the street, his consternation was ludicrous. He had come to feel, however, that when I made up my mind a certain step should be taken, there was small doubt but that that step would be taken. So I personally assisted him into his overcoat, and, as the weather was bad, into his overshoes likewise, and we set forth. Upon the threshold of the front door, he came really quite near fainting, but, upon being reassured, proceeded cautiously, calling upon me loudly all the time to assume the entire blame of the whole expedition. To this I cheerfully acceded, provided he would make the needed efforts, and finally I got him on to the sidewalk. By much coaxing and by speaking of this and that quite outside of himself, I managed to lead him up one street and down another, constantly turning corners, until to his surprise he found himself at his own door again. He was really much pleased at having accomplished this exploit, and when once I got him safely to his room again

I showed him that he had really walked a mile. This was but the beginning. From time to time I was compelled myself to urge him, from point to point, until at last, he put entire confidence in me and would go wherever I led. His man nurse, a most competent and determined one, too, he would not follow. I may relate an incident to show how essential it is to have this confidence placed in yourself. Some time after this, we were driving across a place where the railroad trains could readily hem us in, and, as it happened, they did so. The horse that I was driving was an excitable one, and caused Mr. C. much concern. Betwixt the shrieking of the engines front and back of us and the plunges of my frightened horse, he concluded that his safest place was on foot. Fortunately for both of us he definitely announced his intention of jumping out of the carriage before doing so. I quietly told him that most certainly he would do no such thing, but remain precisely where he was sitting, even though the whole outfit were smashed up, as it was clearly the only safe course. He stoutly remonstrated, and we were upon the point of straining our relationship sadly, when I was compelled to take him by the collar with my left hand, driving, meanwhile, with my right, and swiftly thrust him down in his place with the statement that if he had not yet learned that I was definitely in charge of him, both mind and body he must learn so now. We speedily were able to escape from our disagreeable situation, but at no future time, so far as I myself was concerned, did he thus lose his head. Indeed, he rapidly gained in will power through the repetition of similar instances of exercising self-control, backed up by my urging him to think and act more incisively for himself. The old illusion about the bowel continued for a great while, but inasmuch as it did not prevent his greatly increasing his dietary and living much as other people do, I was obliged to be content with so much of progress:

Mr. B., a young man of prominent position, and upon whom a great number of domestic duties also devolved, and in whom there was a very large measure of conscientiousness in their discharge, was inclined to be worried unless these were thoroughly done. He was of a rather nervous and impressionable nature, and, although active and strong, yet had never been a thoroughly robust man. There had been in his history a very severe attack of typhoid fever, soon after which he had felt himself called upon to work very hard in the discharge of some very grave responsibilities connected with a large estate. At the same time he was called upon, early and late, to assume increasing burdens in a social and professional way. The social burdens were heaviest of all, for, unfortunately, he became a leader in a most exacting society, and was called upon, as one who becomes fashionable inevitably will, to be present at the more correct dinners, and also to lead large cotillions, both in private houses and at public balls. While it might be assumed by the scoffer that these were light labors, I can assure such that they are anything else. As a means of exhausting the vital forces, I doubt if there is anything in the way of what might be considered a social distinction so exceedingly onerous, so decidedly capable of draining a man's every resource, both for active exercise and self-restraint combined, as the leading of a very large German. In addition to the need for pleasing the host or hostess, it is essential to so adjust the dancers that all may be satisfied. There is the inevitable rebellious person, who seems to take joy in disturbing the systematic arrangement made; this person must be courteously restrained, and yet sufficiently checked, and all must be done with the utmost tact and discretion. When I say a man has assumed contracts of this kind, which really means most onerous work from an early evening until the small hours of the morning, incessantly, and when, furthermore, such work is done as an adjunct to a day of reasonable toil, there can be no

cavilling at the intensity of the strain. Let this be repeated night after night, and I think it will be plain to all that as an exhausting process it has scarcely its peer. I have seen the harm done by this line of exaggerated activity so many times that I can speak with confidence. There comes in another disturbing factor here, the inevitable irregularity in diet. When one has received the very doubtful distinction of becoming a "popular man," the one most marked quality must unquestionably be unselfishness, a catering to the tastes of others always before seeking his own comforts, in serving your partner in the supper room before yourself, in dining hastily, or, at least, without due deliberation, before theatre, parties, and in many ways making one's own comforts secondary to those of others. In short, I merely wish to show that a line of life thus marked out, even in a person most willing to live according to conscientious lights, is capable of producing a very marked degree of nervous exhaustion. Indeed it is much more apt to do so in such than in one who would be more willing to selfishly take his ease and enjoy this life of feverish pleasure. The other factors in this young man's case might be said, in brief, to be an inherited tendency to gout, which showed itself in excessive uric acid, and in acid dyspepsia. There was also, probably as a result of all these things, an increasing sleeplessness, a worried sense of responsibility which led him to feel that he was getting behind in his daily routine and unable to keep up; finally, an exaggerated notion that he might, at any moment, be ill and unable to fulfil his engagements, and the also exaggerated conscientiousness, that if he should so fail others would suffer for his neglect. Finally, on two or three occasions a feeling of faintness came on in the street or elsewhere, naturally suspected to be cardiac, and presently there was established a wretched, nervous fear lest he might break down at any moment of some great responsibility and disgrace himself. This went on until he was practically unfit to even attempt the continuance of his old life. Then came the extreme mortification of confessing himself beaten. This superadded chagrin to incapacity, and all was colored by a Spartan desire not to let it be known how he felt. Then I assure you that this young man's condition was most pitiable.

The treatment instituted, of course, dealt with an improvement in nutrition, increased opportunity for rest and sleep, passive exercise when unable to take active, and finally being led up to more active pursuits until the time arrived when it was proper to demand of him to think and act for himself in larger measure. The first and most important instance in which I was called upon to act for him arose thus: He sent for me one night, about half past nine in the evening, with the statement that he was in a condition of suffocation which he feared might be fatal. I came at once and found his room intensely hot. After having listened to his heart and examining him thoroughly, I assured him that except for the extreme heat of the room, the thing required no explanation; that the remedy which I would suggest would be for him to get out of bed, put on his clothes and take a walk in the street with me. He was naturally astounded at this, and asked if I were not joking, especially, as the weather was intensely cold and the ground covered with snow. I assured him most solemnly that not only was I not joking, but had suggested the remedy which I thought only could be found to meet the case. After considering for a moment his natural pluck came to him, and he said: "Very well, if you will take the responsibility of this action, I will do what you say," and I assured him that I cheerfully assumed this risk. "I warn you," said he, "that I am likely to fall in a faint while in the street." I asked if he ever had actually done so. He admitted that it had never gone quite so far, but that at many times he had been upon the very point of so fainting. I again assured him that I was a good deal larger and stronger than was necessary to accomplish my promise, and I would undoubtedly pick him up and carry him home if he fainted. Then we solemnly

set out. We walked for the better part of an hour, and he admitted, when once again in his room, he had received as much benefit from that walk as could be expected from any therapeutic measure. This was the beginning of what proved to be quite a long but entirely successful series of shared labors and responsibilities betwixt us, at the end of which he got absolutely well. It was deemed wise for him a little later on to spend some months roughing it in the West. He promised to go as bidden, only provided I should go with him; and although at first it did not seem practicable, I was enabled to do so, and a very profitable and wholesome time we had. The next large occasion I had to make demands upon his faith in me was in the "bad lands" of Dakota. It was in July, and we had gone two score miles away from all human habitation. It so happened that the weather turned hotter than anything that could be conceived outside the Desert of Sahara.

The point for which we were making was supposed to be a spring; when we reached the place the ground was barely damp. All that night we dug holes and watched for water. When the ground became sufficiently fluid, we drank of the mixture. Next day he begged to make tracks for the ranch where we had been staying, but I called upon him to notice that this was the first exploit that we had attempted, and that it would look exceeding ill if we turned back without pulling a trigger upon the game which we had come to seek. Right manfully he stayed by me that day; and, indeed, it needed all my own resolution to endure the torments of thirst, only modified by the dense mud that we were compelled to drink. Each day the sun rose like a blazing furnace, and each night it set leaving an atmosphere little short of suffocating even until midnight or more, and yet we stayed in that locality for five good days and hunted successfully.

In our journeying from thence up into the foothills of the Rocky Mountains, and finally to their summits, many occasions arose when it became necessary for me to take a very firm stand. This gentleman was of ample intelligence to recognize most fully not only the need for my decisions, but his own occasional lapses from a mental equilibrium. The old fear of falling, which he had felt in the streets of the city, and yet which were never accompanied by any noticeable irregularity in his walk or other objective symptom of vertigo, would, at times, come upon him in situations of some peril. What had originally been a gastric vertigo, or one explainable on some such basis, became simply an emotional one; in short, a feature which was distinctly hysterical. It frequently happened that I was compelled to make him take a very positive stand in his own behalf, and to compel him to act on his own recognizance in such a way as to demonstrate to himself his own capacity for effort or endurance. Time and again he was for waiting at our camp and resting a day or two longer than was deemed wise, and as often I felt it needful to push on. Once we had gotten to a position where, while hunting together, I felt that we could get a better shot by creeping down from a bit of tableland, along which we had ridden, to a very narrow projecting ledge, in getting to the end of which we had to pass over some very dangerous ground. The declination from this point was almost perpendicularly down many hundreds of feet; indeed it was upon the edge of a deep canon, which, it would be no exaggeration to say, measured

all of a thousand to fifteen hundred feet. We reached our point in safety, accomplished a shot, and thereupon prepared to retrace our steps to the mesa above. I rapidly scrambled up to the level and, turning, watched my comrade. Before attempting the climb, his distance being about a hundred feet or so from me, he looked up, and suddenly realizing his perilous situation, querulously begged of me to come back and help him across the straighter parts. I felt it necessary to urge him to stand alone in this matter, and so declined. He became naturally quite vexed, and demanded of me to aid him in what seemed a dire extremity. Having taken my position in the matter, I felt it needful to be firm, and called upon him to observe that he had easily gone across it once and could as readily return. He solemnly adjured me to reconsider; again I declined. Then, in a stately fashion, he denounced me as a would-be murderer, and declared that his blood should be upon my head if he died. However, at this point the dignity of the situation so supported him that he made the effort and successfully. When he reached my side he very nearly fainted away from exhaustion, but this was soon overcome by a little rest, and we mounted and moved on. For some days he maintained the utmost hauteur toward me, but in a short time he admitted that it had been a test situation, and the end justified the means. My friend soon strengthened up amazingly. He lost the slight petulance which, at first, was noticeable. The little querulous complaints about creature discomforts grew most rapidly less, and long before we turned our faces homeward, he was very nearly my peer in physical activity.

As an interesting corollary upon all this, I may relate the other side of the picture. Upon a subsequent occasion two years later, when my health had suffered from extreme overwork, this good friend came to me and announced that he was to be my physician for a time. He insisted upon my going with him for a month's hunting in the Canada woods; and then being as strong as the best of them, whenever I, because of great weariness, would gladly hang back and beg off from special exertions, he would stoutly call upon me to be a man, "follow him into the breach," and with such like robust badinage, insist upon my exerting myself as I had aforetime bullied him into doing. This really afforded him a great deal of amusement and did me a vast deal of good, so we were both amply satisfied.

Mr. L., a young lawyer of large intelligence and very scientific mind and training, had, through three or four years, taken absolutely no vacation. He had worked at his office early and late, and in addition pursued a very elaborate series of experiments on the practical application of electricity. The natural result was a breakdown. The character of his trouble seemed largely mental. There seemed to be in his instance an almost complete abandonment of hope of future gain. He showed a reasonably accurate estimate of the causes of his trouble, of its main features, but, do what I would, it seemed impossible to show him that all this might be completely removed. To be sure, the digestion, the sleep and the appetite were profoundly disturbed; great horrors came upon him at night in which he demanded immediate medical advice. This as supplied usually was to the effect that his apprehensions were groundless, and often with this assurance he was content. I may say here, too, that the assurances on the part of an exceedingly good nurse were as nothing to him; it needed the authoritative assurance from the medical adviser direct. There would be, in his instance, periods of intense apprehension which would drive him to the very verge of frenzy; the rapidity and vigor of his arguments, endeavoring to show that his state was ab-

solutely hopeless, would carry one away almost like an avalanche. I had to wait until the first fires of his eloquence were literally exhausted before I could make an impression. Then it was necessary to combat his arguments, trained as he was in the methods of forensic debate, by taking them up *ad seriatim* and meeting each fully and squarely. The amount of mental concentration which this involved, especially as these arguments frequently occurred at the most irregular of hours, was enormous. In the course of his treatment, which extended over several months, various members of his family were with him from time to time. These were called into requisition to supplement my efforts. Many of them were most intelligent people, and while it might seem that so much argumentation was needless, it was found impossible to keep this young man satisfied with anything less. Simple dogmatic statements will not suffice for a trained mind, unless it come to a question of repetition of argument, and then you may insist upon his recollecting what had gone before. It would be exceedingly interesting to you, I think, if I could retail at length the clever shifting points of view which this man would assume.

He had, unfortunately for me, done some little technical reading upon cases similar to his; this served to puff him up with undue confidence in his power to judge of his own state. The process of slowly and steadily impressing him with the conviction that I was the man fully competent to deal with his most involved medical problem was a troublesome job. I was surprised often to find that I succeeded in doing this, but, as I have said before, each step must be taken and held, the arguments advanced in a particular case must be clearly proved, and there must be no going back upon points definitely made. Indeed, it is quite like a game of chess, where you are practically certain from your medical knowledge, superadded to your knowledge of the game, that you inevitably must win in the long run. Indeed, it is essential to pit one's will-power against a very formidable foe, namely, a man who feels that he is arraigned at the bar upon the charge of losing his own mind. Well, I could most profitably entertain you with the arguments used by this man, because they were to an elaborate degree precisely the same kind of thing that one is usually called upon to meet in dealing with similar cases of profound mental depression where the subject is highly intelligent, and, moreover, most eager to find out means of relief. Two or three instances will sufficiently illustrate how turning points in his case were met. It was determined that he should go into the mountains with a young physician and live the life of a savage for some weeks.

Just here a most troublesome problem arose; this kind of life was profoundly distasteful to him, and his family backed him up in that objection. My utmost enthusiasm as to the delights of life in the woods—and I pictured these in all the glowing vigor of such eloquence as I possessed—failed, apparently, to move him. Nevertheless, move him they did, for he finally went. The young physician who accompanied him was a man of ample intelligence, but he had somehow failed to gain that personal control and confidence which are so necessary, and ere many days had elapsed the whole outfit blew to pieces, from what causes I never could quite clearly ascertain, and I was telegraphed for to come suddenly up into the heart of the Adirondacks and straighten out his affairs. This message also stated, coming from his sister, too, that he was upon the verge of mania, and that I must lay aside all other business and instantly attend. At very great personal inconvenience I did so and found him in a most deplorable condition of excitement. He now

announced to me his conviction, beyond all peradventure, that his mind was irretrievably destroyed, so much so that he distinctly proposed self-destruction as his only deliverance. Of course, this attitude was most serious. I stayed with him two or three days, and turning the full battery of my will-power and argumentation upon him, I managed to get all straight. Once in the night, while sleeping next to him, I awakened at some noise and found him standing, fingering a razor, with the obvious intention of using it upon himself to his very serious hurt. I must confess to being very much frightened, but I remarked quietly in an even tone that I was fully cognizant of his act, ordered him to put the razor in the drawer instantly, and assured him, in a very quiet but most peremptory tone of voice, that if this thing should so much as occur again by a suggestion, much less the actual handling of an instrument, that I would beat him to the ground with a chair; and I begged him to notice that my physical vigor was such that "I might do that I should be sorry for." I emphasized this by going up to him and taking hold of him in such a way as to let him see that my strength was sufficient to justify amply the threat, and yet I was exceedingly careful not to transcend what I might consider my rightful powers in speech or act.

Certainly, this made a very deep impression, for the next day he was vastly more malleable, and I could afford to treat him with a silent air of condemnation which put him at a disadvantage, and here I chose to keep him. Instead of the young medical man with whom he had the blow-out, and the rights of which I never could learn, I sent up to him now an admirable man nurse, of wide and general experience, with whom he seemed to do better. Not long thereafter again there was an explosion, and again I was telegraphed for. Protesting grievously, I went. This time I took the tone of grave affront that he should not have justified my confidence in his promises. He really seemed most regretful at this, and my coming seemed to wake him up to a condition of mental clearness which had not been seen for many days. I told him, however, that this second demand upon me to come so great a distance I could not endure, but that he must needs come down to me by the seashore, where he could be immediately under my eye. He assured me, indeed his family corroborated his view, that it was impossible for him to endure sea air, and that being near the sea would put a catastrophic end to the whole business. My reply was that he was coming near by me and in the sea air, where my work at that time lay. As to this we came into absolute collision. However, the nurse, of course, obeyed my orders, and these were to have all things packed to start at a certain hour. Just previous to this I let my patient go out for a walk with his sister, and when he came back again, dressed as he was a trifle fancifully for travelling, with tennis shoes and blazer, he found all things in readiness for flight.

I gave him time enough for a hasty luncheon and had a trap at the door of the hotel. Into this he, stoutly remonstrating, was presently placed, and we commenced a stage journey of thirty miles, accoutred as he was, and as swift as steam and horse could carry us he followed me to my abiding place. It is needless to remark that the sea air did not disagree with him, and that by constant attrition with the mind which I had been under the necessity of posing as like unto adamant, his weakened mentality gave in and he became much more rapidly like his former self.

The final struggle which this man and I had was in this wise: When very nearly well, both mentally and physically, I told him that to complete the cure I felt that three months spent in the roughest kind of western border life were essential. To this he flatly opposed his strongest veto, and now that his mind was so much clearer and he was so much better able to judge for himself, the struggle was a fierce one. However, I boldly told him that to this question I had given much thought, and my incontrovertible conclusion was that he must needs have this outing. I told him that I should not cease to press it even though months and miles should intervene. We parted apparently in complete rupture. To my real surprise, about six weeks later I got a letter asking me if Oregon would answer for his needs. Somewhat amused, I replied that Oregon, at least if it were in a very rough portion thereof, was precisely the place for his need. To that remote spot he went, and for three months he delved in the earth, or rode or marched about upon the roughest part of its surface, shot big game, and lived the life of a gentle savage. He is now a man of value in any community.

It is scarcely worth while to add to these personal reminiscences, although there are so many notable incidents which crowd into one's mind in thinking of these matters that I could continue to illustrate thus and perhaps usefully. To refer to a case which very recently came under my observation, a friend of mine, who had been under quite prolonged strain in business, involving a long and troublesome conflict with some striking miners, in the settlement of which he frequently put his life in jeopardy, and all the while under the added strain of financial difficulties the outcome of these, came to me with the frank acknowledgment that his mind was getting "queer." He had just before and during these troublous times undertaken to write an elaborate scientific paper upon a subject allied to his business. This he had done with the utmost pleasure, but it did involve an immense and really needless outlay of force. As is very common, the consciousness of his breakdown came at the time that the worst of these difficulties were over. His partner told me that his mental attitude was this: he came to the office even earlier than usual; he would plunge eagerly into his work, and yet throughout the day, which he insisted upon prolonging for himself, he could only get his thoughts upon one train. This one thought would be the subject for so much unnecessary elaboration and minuteness that he bored himself unspeakably by it, and, of course, all those immediately about him.

Added to this he became sleepless, carried his one thought with him frequently through wakeful nights, and, in short, drifted into a state of wretchedness most pitiable. This patient first announced to me his willingness to take unlimited medicines, but to do nothing else. He knew, so he said, that I would advise him to go away a bit, and break up the routine of his work. He anticipated my objections, and recorded his unwillingness to leave his post. This in itself was almost reason enough to demand his going, and so in another interview with his partner we laid our plans. While he was on a flying business trip we engaged his passage for Bermuda upon a certain near date. We ascertained that some people whom he knew were going by the steamer, which would serve our ends somewhat, and, upon his return, quietly

announced to him that his outing had been definitely planned. Singularly enough, once this matter had been thus settled beyond debate, his opposition melted away. He quietly did as he was told, stayed upon this delightful subtropical island for a week or more, and turned up not long ago a thoroughly well-balanced mind again.

In the treatment of those who have ample or reasonable means, the choice of measures is wide and the definiteness of prognosis more assured. Complete change of air and environment is oftentimes essential, along with an entire freedom from responsibility, but it so constantly happens that this is beyond the possibility of realization that we must tax our art even more severely in making the best of very bad circumstances. This, when done, is really a much more creditable exploit. In the instance of a man who must stay in his traces, a measure of extreme good is to outline exactly opportunities and amounts of exercise. Riding may be the best, but costs a lot of money; the bicycle offers almost as much good as a horse, because it gives one a rapidly changing view and greater sweep of horizon than walking. Indoor exercise in gymnasia has much utility, especially competitive forms of boxing, fencing, bowling, wrestling, when the subject is robust enough.

The American man, I think, must present somewhat greater difficulties in straightening out mental deviations than the European. Writers on so-called abulia or abnormal weakness of the will across the water frequently record very satisfactory and surprising cures from sudden and picturesque methods, such as bringing to a point some slight delusion or trend of thought, and by a single act of legerdemain most theatrically cure the sufferer for all time. Our material over here must be tougher. It takes a long fight, as a rule, to chase away the mental phantoms. They are rather more persistent, perhaps, and require more logical methods to dispel. As a single measure, sufficiently revolutionary to sharply alter the line of aberrant thinking and rehabilitate altered emotions, the regulation of the bodily habits of the patient does most. Except among the more cultivated classes, the daily morning bath is really not common, and even then may be changed to advantage by making it colder or adding salt, which is of value to stimulate the skin. Insist upon a prolonged rough rubbing afterward, or, if sleeplessness exists, the use of the wet pack at bedtime, or gymnastic exercises instead of or along with these. I have a patient who, finding himself losing ground while conducting a large and worrisome business, adopted at my suggestion, because I knew he had formerly been skilled in fencing, a half hour's exercise with the foils daily before breakfast. Upon this plan alone he gained in weight and vigor, and, although it might be open to the objection of inducing some exhaustion, taken at that time, he still continues enthusiastically to pursue this, although two or three years have elapsed.

New means of amusement must be made habitual or reawakened. A change of diet is many times essential. I found one gentleman who distinctly contemplated giving up his business because of increasing disabilities, chiefly mental, was literally starving himself under the advice of a former physician, having reduced his diet to two scant meals a day. Here sleep had fled, the blood count was less than half normal, and yet I instituted

for this case exercises carefully adjusted to suit his needs and be taken at the only hour at his command before a very early breakfast. Along with this, however, a series of predigested foods frequently taken, and early hours for bed, put him in working trim again. When it can be learned that active exercise may not be tolerated, passive exercises can be first applied, and these finally changed to active ones after the manner of the Swedish methods of Mr. Ling. Great credit is due this worthy Swede. In modern times there are very many improvements in the details of his admirable outlines, but in the main the best methods are always his.

I am now particularly interested in the teachings of a man named Edwin Checkly, who certainly has made practical the use of muscular exercises taken wherever and whenever one may choose, in whatever clothing one may wear, without the loss of time. So wise is this that I will say one word about it. He teaches first the need to learn to breathe as an exercise; next, how to stand and walk; then how to move the limbs and trunk, so that the head and all may balance accurately. The one essential point is to learn the proper use of all the voluntary muscles and also the joints. Perhaps I could not make clear what I have in mind without too much elaboration, and yet you will see the very fact of watching closely one's own defects in breathing, standing, moving, and correcting these sedulously, and upon right principles, will in itself show great gain in improving the usefulness of the body as an engine.

The way to get the muscles strong and the joints to do their bidding is first to concentrate the will upon definite muscular acts, to simulate by the contractions in the muscles so directed movements designed to effect certain ends. For instance, the arm may be held straight out at right angles to the body, the muscles, then, both of flexion and extension, may be thrown into tension, and as strongly as it is possible to do. Thus is the arm in perfect equipoise. A slight direction of the will to move up or down will overcome the opposing set of muscles just enough to accomplish another act. Now the more strongly this will power is exerted, just the more vigorously will the muscle contract, and just so much more will the ebb and flow of circulation be enhanced. Again, the movement of lifting a heavy weight may be simulated, and by putting forth the whole of one's powers in the act of imaginary lifting, does one get just so much of muscular exercise as is concerned in the act of raising so heavy a weight as he is capable of doing. This principle, as you see, can be made to subserve many ends when judiciously applied. It can be done without so much as laying off the coat. Especially can these movements be directed to revivify the flabby muscles of sedentary people, but the particular application to the cases under consideration is the value of this clean-cut, systematic exercise of the will upon these simple muscular acts.

Endless are the points that one could touch upon in elaborating this subject, but what I have said will serve amply my object, which is to stimulate you to devising how, upon right principles and common-sense methods, the best results may be obtained, always maintaining toward these sufferers a confident front of unconquerable hopefulness.

SOME EXPERIMENTS ON ACETONURIA IN DIABETES MELLITUS, AND ON THE PHYSIOLOGICAL ACTION OF ACETONE IN THE ANIMAL ORGANISM.

By G. Metzler, M.D.,
Philadelphia.

(Continued from page 605.)

II. Physiological.

The following experiments were performed partly in the physiological and partly in the therapeutical laboratory of the University of Pennsylvania. To Professor Reichert and to Dr. Cerna I am indebted for assistance and valuable advice in the performance of my work.

Experiment No. 1.—Dog; Weight, 5 Kilos.; 25 c.c. Acetone Diluted with 15 c.c. of Water Introduced into the Stomach by Means of a Tube.

Time. Hours. Min.	Remarks.
11.00 A.M.	Introduction of acetone into the stomach.
11.03	Vomited.
11.05	Staggering.
11.06	Marked incoördination.
11.07	Profuse salivation.
11.13	Vomited greenish, frothy matter. Respiration deep and labored.
11.14	Tried to walk, but fell on the floor.
11.30	Vomited.
11.33	Urinated; urine gave an iodoform reaction.
11.35	Walked with difficulty.
11.39	Vomited bile and a few drops of blood.
11.44	Walked a few seconds, but fell again.
11.47	Walked a minute, and fell again.
11.50	Vomited.
11.58	Walked better, drank much water.
12.20	Crept into a box and fell into profound sleep.

EXPERIMENT No. 2.—DOG.

TIME. Hours. Min.	REMARKS.
11.30 A.M.	Injected, hypodermically, 5 c.c. in 9 c.c. of water.
11.32	Urinated.
11.40	Drinks much water.
11.50	" " "
11.57	Second injection of 5 c.c. in 4 c.c. of water. Immediately after injection, runs lively around the room.
12.30 P.M.	Slight incoördination.
1.45	Respiration slow; temperature, 99° F.

EXPERIMENT No. 3.—DOG; WEIGHT, 4 KILOS.

TIME. Hours. Min.	REMARKS.
2.00 P.M.	Injected 10 c.c. in 20 c.c. of water.
2.06	Runs lively through the room.
2.10	Drinks much water.
2.56	Injected 5 c.c. in 10 c.c. of water.
3.07	Lies quiet, otherwise no distinct signs.

EXPERIMENT No. 4.—DOG; WEIGHT, 5 KILOS.

TIME. Hours. Min.	REMARKS.
1.25 P.M.	Injected 18 c.c. in 30 c.c. of water.
1.30	Defecates.
1.35	Signs of incoördination; trembles.
1.38	Trembling increases.
1.45	Dog sits quiet; occasional clonic contractions of right foreleg.
1.53	Labored respiration; occasional nervous shocks.
2.00	Dyspnœa.
2.02	Dyspnœa getting worse; lies flat on the abdomen.
2.22	Lies on the floor; moves his head in various directions.
2.23	Trembling movements of the legs.
2.30	Placed on his feet, falls again.
2.49	Lies on one side; with each respiration a trembling movement goes through his whole body; intellect seems to be preserved.
2.53	Clonic contraction of the legs, at times violently; moves his head in all directions; sensation greatly diminished.
3.19	Throws his head in all directions; whines.
3.21	Above signs aggravated.
3.22	Nervous shocks.
3.25	Whines.
3.27	Whines continuously.
3.30	Temperature, 34.3° C.
3.40	Clonic contraction of the legs.
3.45	Pupillar reflex lost.
3.48	The clonic contractions are not so violent.
3.54	Rapid respiration; tosses his head around; whines.
4.02	Very quiet; occasional contraction of the extremities.
4.45	Pupillar reflex better, but completely paralyzed.
4.50	Tosses his head in all directions; whines.
4.55	Every half minute raises his head for a few seconds, then falls down again.
5.26	Attempts to stand; has gained little power in the forelegs.

BLOOD-PRESSURE TRACINGS.—EXPERIMENT NO. 1.—DOG; WEIGHT, 5 KILOS.

Time.	Dose.	Pulse per min.	Blood Press. in c.m. m.	Remarks.
0			114–136	Normal. Carotid connected with kymograph. Injected into ext. jugular.
20s.		201	124–146	
40		174	120–130	
45	5 c.c. in			
1.05	10 c.c. water	178	72– 80	
1.25		180	50– 58	
1 45		207	68– 76	
2.05		210	82– 90	
2.25		219	92–102	
2.45		204	100–112	
2.57		215	108–124	
	5 c.c. in			
3.00	10 c.c. water			
3.17		150	74– 86	
3.37		186	64– 92	
3.57		204	76–104	
4.17		117	84–116	
4.37		117	88–120	
	5 c.c. in			
4.43	10 c.c. water			
4.57		120	48– 74	
5.17		132	82– 90	
5.37		189	92–104	
	10 c.c. in			
5.42	15 c.c. water			
5.57		132	22–58	
6.17		51	20–38	
6.18				Heart does not work.
6.29				Heart beats again.
6.34				Heart does not work.
6.37		42	18	
6.38				Heart beats again.
6.58		180	70	

EXPERIMENT NO. 2.—DOG; WEIGHT, 4 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Remarks.
0			99–110	Normal. Carotid connected with kymograph, injected in external jugular.
20		190	99–110	
	10 c.c. in			
20	10 c.c. water			
40		99	14	
60		54	16	
63				Animal is dead.

EXPERIMENT NO. 3.—DOG; WEIGHT, 5 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Remarks.
0			110–122	Normal. Carotid connected with kymograph, injected in external jugular.
10		198	110–122	
10	2 c.c. in 4 c.c. water			
30		111	92–126	
50		144	110–128	
1.10		135	104–120	
1.30		150	100–120	
1.50		144	102–116	
2.00		144	100–116	Stop, one minute.
3.15		160	104–120	
3.17				Stop, two minutes.
5.35		174	102–120	
5.36	2 c.c. in 4 c.c. water			
5.55		129	102–120	
6.15		177	102–120	
6.35		177	106–120	
6.39				Stop, one minute.
6.50		172	108–118	
6.50				Stop, two minutes.
6.65		175	108–114	

EXPERIMENT NO. 4.—DOG; WEIGHT, 13 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Remarks.
0			126–140	Normal. Carotid connected with kymograph, injected in external jugular.
20		177	126–140	
20	3 c.c. in 6 c.c. water			
40		150	100–116	
1.00		156	112–130	
1.20		177	124–140	
1.28	3 c.c. in 6 c.c. water			
1.40		171	114–126	
1.55		184	120–136	
1.55				Stop, one minute.
3.15		170	108–134	
3.25		174	112–138	
3.25	3 c.c. in 6 c.c. water			
3.45		180	72–92	
4.05		174	82–100	
4.20		164	94–112	
4.20				Stop, two minutes.
6.40		174	96–118	
6.47				Stop, one minute.
8.00		171	102–128	
8.10		156	104–126	Stop, two minutes.
10.17		154	100–136	
10.17	15 c.c. undiluted			
10.35		83	20–76	Stop, one and a half minutes.
10.40		115	70–130	After the last injection the pressure fell to zero; no pulse beats for several seconds, then they returned again.

EXPERIMENT NO. 5.—DOG; WEIGHT, 5 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Resp. per min	Remarks.
0			98-124		Normal. Carotid and trachea connected with kymograph.
36		198	98-124	50	
36	5 c.c. in				
36	10 c.c. water				
56		156	56	51	
1.16		144	56	60	After injection respiration became very shallow.
1.36		147	76–86	75	
1.56		144	80–90	96	
2.16		129	72–84	93	
2.36		108	56–72	42	
2.56		99	36–48	0	
3.16		84	20–28	0	
3.36		91	14	4	
3.46		90	10	1	Stop, half a minute.
4.16					Dog is dead.

EXPERIMENT NO. 6.—DOG; WEIGHT, 5 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Resp. per min.	Remarks.
0			104–128		Normal. Carotid and trachea connected with kymograph.
20s.		186	104–128	30	
30s.		185	102–126	30	
30s.	5 c.c. in 10 c.c. water				After injection respiration at once paralyzed for eighteen seconds.
50		120	50–72	2	
1.10		108	48 80	42	
1.30		108	54–90	33	Stop, half a minute.
2.20		78	52–72	0	No resp. for twenty-four seconds.
2.40		87	38–56	3	
3.00		81	20–36	4	
3.20		48	8–20	3	
3.20		48	10	3	
3.56					Animal is dead.

EXPERIMENT NO. 7.—DOG; WEIGHT, 12 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Remarks.
0			114-128	Carotid connected with kymograph; injection in external jugular; both vagi cut.
10s.		156	128–170	
30s.		120	122–148	
46s.	10 c.c. in 20 c.c. water			
1.06		129	96–138	Action of drug was noticed ten seconds after injection.
1.26		156	112–150	
1.46		192	122–156	
2.06		189	124–150	
2.26		225	128–152	Stop, two minutes.
4.46		210	130–158	
4.46	7 c.c. in 10 c.c. water			
5.06		180	114	
5.26		180	86–108	
5.46		177	82–112	

EXPERIMENT No. 8.—DOG; WEIGHT, 13 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Remarks.
0			210	Carotid connected with kymograph; both vagi cut; inj. ext. jug.
20		174	210	
	14 c.c. in			
20	20 c.c. water			
40		195	132–160	
1.00		219	132–166	
1.20		225	168–188	Stop, half a minute.
2.10		225	162–188	
2.30		213	162–178	
	14 c.c. in			
2.33	20 c.c. water			
2.50		210	124–150	
3.10		219	118–136	
3.30		232	124–144	Stop, half a minute.
4.20		243	138	
4.35		252	144	

EXPERIMENT No. 9.—DOG; WEIGHT, 12 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Resp. per min.	Remarks.
0			138		Both vagi cut. Carotid connected with kymograph; injection in external jugular.
20		207	138	15	
25	stop, 5 seconds				
40		208	140	16	
	12 c.c. in				
40	20 c.c. water				
1.00		198	134	18	
1.20		213	164	21	
1.40		231	138–164	24	
1.48					Stop, half a minute.
2.30		225	128–150	36	
2.32					Stop, one minute.
	12 c.c. in				
3.50	20 c.c. water	212	158	21	
4.10		150	100	72	
4.30		201	114	90	
4.37					Stop, ten seconds.
4.50		201	136–146	66	
5.10		213	136–150	48	
5.30		210	138–152	36	

EXPERIMENT NO. 10.—DOG; WEIGHT, 7 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Resp. per min.	Remarks.
0			130–140		Both vagi cut. Carotid and trachea connected
	10 c.c. in				with the kymograph; inj.
10	15 c.c. water	186	130–140	90	in ext. jugular.
30		189	90	117	
50		225	74	105	
1.10		228	110	105	
1.30		222	120	99	
1.33					Stop, one minute.
2.50		228	128	90	Resp. very shallow.
3.10		231	126	87	" " "
3.30		192	124	75	" " "
3.50		189	122		Needle failed to write.
4.10		186	120		" " "
4.21					Stop, one minute.
5.20		198	114	87	
5.31					Stop, one and a half minutes.
	10 c.c. in				
7.05	15 c.c. water	200	114	93	
7.20		172	100	114	Stop, one minute.
8.25		204	100		Stop, one minute.
9.28		200	108		

EXPERIMENT NO. 11.—DOG; WEIGHT, 8 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Remarks.
0			40	Spinal cord and both vagi cut.
20		189	26	Carotid connected with kymo-
40		159	14	graph.
	9 c.c. in			
50	18 c.c. water			
1.10				Apparatus did not register.
1.32				
1.42		132	30	
1.55		138	20	
2.15		132	10	
3.13		132	20	

EXPERIMENT NO. 12.—DOG; WEIGHT, 18 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Remarks.
0			140	Spinal cord and both vagi cut.
20		212	132	Carotid connected with kymo-
40		200	168	graph; inj. in ext. jugular.
1.00				Apparatus failed to register.
	10 c.c. in			
1.04	20 c.c. water			
1.24		150	126	
1.44		212	140	
2.04		212	160	
2.24		186	134–182	
2.34		185	124–168	

EXPERIMENT NO. 13.—DOG; WEIGHT, 8 KILOS.

Time.	Dose.	Pulse per min.	Blood Pressure.	Remarks.
0			104	Spinal cord and both vagi cut.
20		198	116	Carotid connected with kymograph; inj. in ext. jugular.
1.00		192	120	
1.03				Stop, one minute.
2.20		216	84	
	9 c.c. in			
2.30	14 c.c. water	192	128	
2.50		177	78	
2.56				Stop, half minute.
	8 c.c. in			
3 43	12 c.c. water			Pulse beats not observable.
4.03		177	64	
4.23		129	64	
4.43		111	62	
5.03		132	68	
5.23				Pulse beats not observable.
5.26				Stop, half a minute.
	13 c.c. in			
5.58	15 c.c. water			
6.03		165	100	
6.11			20–40	Pulse beats not observable.

In the urine of the cases examined (these examinations were detailed in Part I of this paper), acetone was not separated as acetone; lack of material and time did not permit of such a procedure. Its presence in every case was determined by the qualitative tests before described.

In this research normal urine from various persons was distilled and comparative tests made with the distillate obtained from diabetic urine. In every case the distillate from normal urine failed to respond to the iodoform reaction. The distillate prepared from the pathological urine responded to all of the tests stated in the tables of experiments. As all these tests have proved satisfactory in the hands of expert investigators, and, as in this research, their efficiency has been tested by experimenting with pure acetone, the statements in the tables as to the presence or absence of acetone may be taken as correct.

In the first case, that of Dr. Trowbridge, of Worcester, Mass., a chronic case of several years, with six per cent. of sugar in the urine, only an insignificant trace of acetone was found. This patient weighs 230 pounds.

The second case, that of Dr. Daland, gave very decided acetone tests. Outside of the fact that the patient soon died, nothing was learned as to the course of the patient's illness.

The third case, an Italian, a patient in the Pennsylvania Hospital, was emaciated, and complained of pain in the feet, knees, abdomen and chest. At no time, in this case, was the ferric chloride reaction obtained. Noticeable in this case is the extreme slow pulse, which was sometimes not more than thirty per minute, usually with a variation of twenty beats between morning and evening. The temperature never increased above normal, but sometimes was as low as 96° F. This case with the first illustrates the extreme variations in this disease. Both cases contained about the same percentage of sugar in the

urine. The first case, with hardly any acetone in the urine, was a woman, stout and able to work ; no alarming symptoms had ever been observed ; some drowsiness and bad odor of the breath were all that the patient complained of. The third case, on the other hand, with considerable acetone in the urine, which, however, was variable in quantity at different times, presented in every respect the case of a man who is the victim of a profound pathological process. From the tables it will be seen that no substance was employed in the treatment, or enterd into the food that could have responded to a test for acetone in the urine or distillate.

The fourth case presented diabetes mellitus in a far-advanced stage. Enormous quantities of urine were passed, yet the presence of from six to seven per cent. of sugar was shown by the saccharimetre. The patient, 60 years of age, complained of no other symptom than weakness, thirst and occasional diarrhœa. In this case the urine gave the test with ferric chloride. As, however, the iodoform reaction never presented the peculiar iodoform color and odor so intensely as in the third case, and as the sodium nitroprusside test was negative, it was concluded that, in this case, less acetone was present than in the third. The ferric chloride reaction in the ethereal extract did not fade away within twenty-four or forty-eight hours; consequently, diacetic acid could not have produced it. Whether it was due to beta-oxybutyric acid could not be determined with positiveness, as that acid could not be separated from the urine.

According to v. Jaksch, acetone may be determined quantitatively, sufficiently accurate for all clinical purposes, by comparing the color intensity of the iodoform reaction in the urine distillate with the color of iodoform in a solution containing a known quantity of acetone. Scientific accuracy cannot be obtained by this reaction.[1]

From the tables it will be seen that the elimination of urea was more or less increased in all of the cases. This is in accordance with the statements in the literature on diabetes mellitus, that the elimination of urea is always increased in that disease.

The physiological experiments, in one of which the acetone was introduced into the stomach, in three by hypodermic injections, and the thirteen blood-pressure experiments, show that acetone has poisonous properties. As the action of drugs in the human organism is generally the same as in the animal organism,[2] the statement by Professor Flint that acetone has no poisonous action at all in the human organism is incorrect.

Given hypodermically in sufficient quantity, it acts powerfully on all the nervous centres, producing inco-ordination, trembling, clonic contractions, and, finally, loss of sensation and paralysis.

The blood-pressure experiments show, as the most constant average result that acetone diminishes the frequency of the cardiac contractions and lowers the blood-pressure.

[1] J. Messinger (Ber. d. Chem. Gesellschaft, 21, 3,366, 1888) determined the presence of acetone quantitatively by a volumetric method based on the iodoform reaction, which is said to give more accurate results.

[2] Prof. H. C. Wood, Treatise on Therapeutics, etc. Preface to first edition.

When poisonous doses were injected, the fall of the blood-pressure was very sudden, and the respiration was instantly inhibited. After some time a few deep respiratory waves returned, but gradually they became fewer and more shallow until death occurred. These phenomena were not observed when both vagi had been cut before the injection of the drug. The frequency of the pulse was not diminished as in the normal experiments, but generally increased. The respiration was not inhibited, but at once powerfully stimulated, both in depth and frequency.

To ascertain whether the increase in the frequency of the pulse in the latter experiments was due to an action of the drug on the accelerator centres in the medulla oblongata, the spinal cord was severed in three experiments to separate these centres from the heart. The result was that the frequency of the pulse did not increase.

From the results of these experiments it may be concluded that acetone acts on the pneumogastric nerves and on the medulla oblongata.

The latter statement is in contradiction to that of Professor Albertoni,[1] who stated that acetone did not act on the medulla oblongata.

Conclusions.

I. Acetone in the urine is the product of a peculiar pathological process, and is easily recognized in the distillate from the urine by the tests described.

II. Acetone, when found in the urine in any disease, must be looked upon as a complication of that disease.

III. Acetone possesses poisonous properties, and, when circulating in the blood *in sufficient quantity*, is capable of producing deleterious results, and finally death.

IV. Acetone acts on the whole nervous system. Because of its powerful action on the pneumogastric nerves, it diminishes the frequency of the pulse and lowers the blood-pressure.

V. Poisonous doses of acetone paralyze respiration.

[1] Prof. H. C. Wood, Treatise on Therapeutics, etc.

CASE OF TUBERCULAR CONSOLIDATION OF THE LEFT LUNG, WITH DILATED BRONCHIAL TUBES, SIMULATING CARDIAC HYPERTROPHY AND PULMONARY CAVITIES; SPECIFIC HYPERPLASTIC OSTEITIS; CASE OF BLOOD POISONING FROM THE RETENTION OF A DEAD FŒTUS IN UTERO, SIMULATING HEPATIC CANCER OR ABSCESS; TREATMENT OF NERVOUS DYSPEPSIA.

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A Clinical Lecture Delivered at the University Hospital.

This man, whom I bring before you to-day, is a patient of Dr. Morton, who has kindly sent the case to us. He is 49 years of age; by birth, a German; by occupation, a distiller. His family history is as follows: his father died of Asiatic cholera; his mother of consumption. He has had one brother, who died in infancy of an unknown cause, while two other brothers and one sister are living and in good health. There is nothing in the personal history of the man which sheds any light on his present condition, until we reach a period which he reports as being two years ago, when he caught a very severe cold, which settled on his chest. For some months subsequent to this occurrence he had a bad cough, expectorating considerable quantities of yellowish-looking material. However, he seemed to recover from that attack, regaining fairly his former condition, with the exception of an occasional cough with some expectoration. He remained in this condition until January of the present year, when he caught fresh cold, and in a short time became too weak to attend to his daily duties. The previous symptoms returned with increased severity, although the cough and expectoration have been somewhat less for the past two weeks. During January, he raised with the expectoration a little blood, every morning for several weeks. He has been losing flesh gradually ever since. His appetite is poor. There is no history of night-sweats. In appearance he is a man of medium height and weight, being fairly well nourished and of good color.

In examining the physical signs of this case, we find, on looking at his hands, that the nails are clavate, somewhat bulbous and enlarged; possibly, this is the result of his occupation, but generally such a condition is met with in cases of long-standing chest-trouble, more particularly in phthisis. Of course, we find it also in cases of organic heart disease. On inspection there is seen lessened expansion over the left side of the chest. The apex beat is ab-

sent from its normal position. There can be seen marked pulsation in the epigastric region, stronger in inspiration than in expiration. Caution should be observed in studying the cause of epigastric pulsation, for, in the majority of cases, it is merely the normal pulsation accelerated by nervousness due to the examination. Let the thought that it may be an aneurism, be the last to occupy your mind in such cases. Again, if the heart be displaced downward and to the right, pulsation in the epigastrium may be one of the first symptoms. This latter condition would be produced by a pleural effusion in the left side of the chest, mechanically forcing the heart into the position just described. Palpation in the erect posture fails to locate the apex-beat, but, on leaning our patient forward, the beat is felt, although feebly, one-half inch outside of the normal apex position. There is increased vocal fremitus over the left lung, particularly over an area adjoining the cardiac dulness to the left. Over the right lung, the vocal fremitus is normal. Percussion gives resonance all over the right lung, extending too low, according to normal boundaries. The liver-dulness begins about one inch below the normal line, as if it were forced down by a distended lung above. On the left side percussion gives an area of markedly impaired resonance, adjoining the left border of the area of cardiac dulness. It extends out to the anterior axillary line, up to the third rib and in to join the cardiac dulness. Resonance over the rest of the left lung is slightly impaired, compared with the right lung. Good resonance exists everywhere posteriorly. The heart dulness reaches to the right border of the sternum on the right, and merges into the abnormal dulness at the left of the usual site of cardiac dulness. On auscultation over the right lung, we find that the breath sounds are normal. Over the left lung we get harsh respiratory sounds everywhere, except in the area of flatness to the left of the cardial dulness; at this point we get typical tubular breathing, both on inspiration and expiration, with pectoriloquy and a few râles. Posteriorly, there is tubular breathing over the right bronchial root, with pectoriloquy.

The heart sounds are disturbed, but not accompanied by any murmur. The point of maximum intensity of heart sounds is at the junction of the fifth costal cartilage with the left border of the sternum. A microscopical examination of the sputa reveals the presence of numerous tubercle bacilli. The urine has been examined and found normal.

This is a most interesting case. Here we have impaired inspiratory and expiratory effort on the left side of the chest, with exaggerated cardiac impulse in the epigastric region. Now, the question arises, has the man a pleural effusion on the left side? I have seen cases of pleural effusion where the liquid lay between the left side of the pericardium and the pulmonary pleura, presenting some of the symptoms of this man; but on puncture, pus was obtained, thus establishing a diagnosis. It is rather unusual to find dulness anteriorly in the lower part of the upper lobe of the lung. In phthisis, ordinarily, we look first to the apices of the lungs; in pneumonia and pleural effusions we turn our attention first to the base of the lung.

The physical signs here, however, are clear enough if we will but study them intelligently. There is compensatory emphysema of the right lung, caus-

ing the downward displacement of the liver. The history of cough lasting for two years is explained by dilated bronchial tubes, which, in their physical signs, somewhat simulate cavities in the lungs; while at the edge of the cardiac dulness there is a patch of tubercular consolidation in the lung tissue, extending the apparent dulness of this organ toward the anterior axillary line, as we have observed. Although peculiarly situated, this area of consolidation is far more favorably located than if it were at the apex of the lung. Apical lesions are much more prone to become extensive. The reason for this is not definitely known; possibly, it is due to some peculiar, minute, anatomical arrangement.

Owing to the emphysema before mentioned, we find that there is a peculiar mixture of physical signs in this case. The existence of emphysema offers an obstruction to the flow of blood through the lungs, thereby causing dilatation of the right side of the heart, which, resting on the diaphragm, imparts its impulses directly to the chest-wall, thus producing the forcible pulsation in the epigastrium observed so plainly on the first glance at the man. I think that emphysema rather prevents the rapid growth of tubercles; on the other hand I find myself liable to think that tuberculosis is not so marked in a man where both conditions are present, owing to the fact that emphysema disguises to some extent the ordinary physical signs of phthisis. So I always add the possibility of the existence of thirty-three or fifty per cent. more of organic disease when examining emphysematous lungs than I can elicit by the physical signs. This influences the prognosis, and as a practical point is well worth bearing in mind. Here, however, were further evidence necessary to establish a diagnosis, the testimony borne by the sputa would be conclusive.

The next patient who claims our attention is a woman, aged 42 years. She has borne four children, two of whom are living and well. She has been married twice. Her first husband died of consumption; her present husband is a sound man, to whom she has been married eight years, and by whom she has had one child, which is living and well. She states that she was never ill in her life until five years ago, when she began to complain of pain in her knees. At first her legs were swollen, but the swelling soon subsided, the pain developing in both arms, the use of which she almost entirely lost. This condition lasted for about one year, being evidently an attack of perineuritis, for which I treated her. She is, as you see, unable to straighten her arms properly. The only means for correcting this condition is the use daily of active and passive motion, and the internal administration of potassium iodide to favor absorption. She comes to us now complaining of sore throat and with some local swelling over the tibia, which, on pressure, produces evidences of pain. This condition is undoubtedly one of specific hyperplastic osteitis, no trouble being required to diagnose the cause. We will place her on treatment appropriate to her condition, ordering an ointment of equal parts of unguentum hydrargyri nitratis, lanolin and cosmoline. Internally she will be given bichloride of mercury and iodide of potassium.

Our next patient comes to us complaining of symptoms which have excited suspicion in the mind of her physician of the possibility of the presence in her liver, of an abscess or soft cancer. Let us study carefully these symptoms

before we commit ourselves to any diagnosis. She is 34 years of age; she lives in the country, not far from Philadelphia; she is married and has been pregnant five times. As a result of these five pregnancies, she has four children living, the fifth pregnancy having resulted in a stillbirth; this was her last delivery. She began to complain last November, being at that time pregnant. Her appetite was poor, and she vomited everything she drank. She had also a bad cough with frequent paroxysms and profuse expectoration of a dense, yellowish sputa. It is an interesting fact that the vomiting occurred late in pregnancy, as she was delivered of twins on March 18, 1891. Her bowels have been regular from November up to the present time. After recovering from her confinement, she was able to be about for three weeks. At the expiration of this period she began to complain of frequent pain in the region of the stomach. She became thin, pale and sallow in appearance, reaching a condition resembling very much cancerous cachexia. Whether this condition is due to hepatic trouble, only the result of a physical examination of that organ will show. Abscess of the liver is rare, and as I have remarked on previous occasions, a large proportion are of septic origin, following ulcerative conditions of the lower bowel.

I look upon this case with suspicion also for the following reason: One twin was stillborn, the doctor in attendance stating that it had been dead probably three or four weeks, although it is impossible to make any such statement with any degree of accuracy. Therefore, it is possible that the child was dead even longer, having undergone decomposition. This makes it possible that she may be suffering from blood poisoning, due to the retention of the dead fœtus in the uterine cavity. Here is a distinct morbid cause to which we cannot fail to assign considerable importance. In addition to the above facts, the patient says that the cough left her the second day after her delivery; still further evidence of some connection with the retention of the fœtus. Then, too, you know that vomiting occurs in the beginning of pregnancy; in fact, being considered one of the diagnostic features of this condition. In this case it did not begin until her pregnancy was half finished. The vomiting, like the cough, ceased after the birth of the fœtus. How, then, can we refuse to admit a direct connection between the cough and vomiting and the retention of the fœtus? The other twin is living and well.

Her pulse is soft, weak and frequent. Strong murmurs are heard at the base of the heart and over the jugular veins at the root of the neck. They are hæmic or blood murmurs, due to the poor condition of the blood and the relaxed state of the walls of the bloodvessels. My reason for saying that they are hæmic and not organic is that they are heard best at the base of the heart and are not transmitted. Further examination reveals a considerable amount of œdema of the ankles and legs, and that the veins of these parts are decidedly varicose. There are a number of scars on her legs, probably due, as she states, to eleven abscesses which she had after a confinement three years ago. At present she has no fever. Examination of her urine shows that it is rather turbid, pale, with specific gravity of 1008, containing neither albumin nor sugar; hence we find that we cannot explain the dropsy by the evidence of the existence of heart or kidney trouble. I think it is due to the poverty of the

blood, combined with nervous exhaustion and rapid ineffectual heart-action. She complains of a fluttering sensation in the region of the stomach. She was told by her physician that she had an enlarged liver. Should we find the liver enlarged, it will become a question whether there is present an abscess or tumor in this organ. Upon physical examination I find that the liver is apparently enlarged, with some increase in hardness and resistance. The right lobe is smooth, and its edge is a little blunter than is natural. The left lobe is not enlarged at all, and is little softer than ordinary. The region of the gall-bladder is not distinct. I find no unevenness anywhere whatever, hence I dismiss the idea of its being a tumor from my mind. Then she gives a history of its sudden onset after an acute illness; then, too, she has no pain over the region, so that I feel justified in excluding cancer. Has she, however, any abscess in the right lobe, which is the enlarged one? If she had, I feel certain that she could not have borne the pressure which I put upon the lobe without an outcry; on the contrary, she states that the pressure gives her no pain whatever. She reports that three weeks after the twins were born, she had a severe illness, in which her liver was said to have been enlarged; that she had fever and was delirious at this time. I do not know what the attack was, but I am inclined to think that she had a localized peritonitis which pushed the liver down, and that it is now held down by bands of lymph which have become organized, which accounts for its apparent increase in size. I feel confident in saying that there is present here no abscess or tumor of the liver.

Her circulation is poor, but there is no cardiac lesion. She does not seem to be suffering from intense anæmia, therefore I believe that she will get perfectly well again. We will give her iron and arsenic in acceptable form and dose. Basham's mixture often seems suitable in such cases. It can be varied to suit individual cases; the following modified form will be efficacious here:

℞. Tr. ferri chloridi . . . . . 2 drachms.
Liq. arsenici chloridi . . . . . 36 minims.
Acid. acetici diluti . . . . . 1 drachm.
Glycerini . . . . . 3 drachms.
Liq. ammonii acetatis . . . . . q. s. to make 6 ounces. M.
Sig.—A dessertspoonful to a tablespoonful three times daily.

As a cardiac tonic we will give the tincture of nux vomica in five, six or ten-drop doses in a tablespoonful of water before each meal. As soon as she gets a little stronger, we will omit the nux vomica and give a tonic pill, such as the following:

℞. Quininæ sulphatis . . . . . 1 grain.
Ext. nucis vomicæ . . . . . ⅛ "
Ferri carbonatis . . . . . 2 grains.
Acidi arseniosi . . . . . 1/10 grain. M.
Sig.—One after each meal.

I would give this pill as soon as the dropsy disappears. I believe that it would have a good effect to apply tincture of iodine over the liver. Of course, great care must be exerted in attending to diet and hygiene. She should have farinaceous foods, beef tea and such articles of diet as are easily digested and furnish strength. Although she looks very wretched, I cannot think that she has an hepatic abscess; yet, the septic condition of which I speak would lead one to suspect such a possibility.

This next patient, a man, lives in the suburbs of the city. He was always healthy until some time ago, when he had an attack of pneumonia, which lasted seven weeks. He works in a dyeing establishment, which is always a very wet place. He attributes his illness to this employment. Some trades, of necessity, have influences for evil on those whose business it is to engage in them ; but the work must be done, although it leads, in a large percentage of cases, to disease. On the other hand, there are many men engaged in healthful work but in unhealthful surroundings, due to lack of appreciation of the laws of hygiene. After recovering from the pneumonia, he worked until within six weeks, when he began to complain of a cough and of a pain in the stomach ; worse after eating, sometimes causing him to vomit. His bowels are regular. He has pain and swelling in the calf of the left leg and swelling and pain in the region of the heart, so that very often he is absolutely unable to sleep on his left side. He has always been a strong, healthy man, and is still in good physical condition. He has no cardiac murmurs ; his tongue is clean ; there is no sign of ascites. Physical examination reveals nowhere the presence of organic disease. Attacks of vertigo come on so suddenly, that frequently he is thrown to the ground. After these attacks he is also subject to profuse sweatings, sometimes having three attacks of vertigo and subsequent sweats in a day.

The vertigo in this case does not come from the heart. When such an attack comes as suddenly as described in this man's case, it deserves the name of "epileptiform vertigo." A man may be standing still or walking quietly along ; suddenly he turns white and quickly becomes very giddy, clutches at anything within his reach, and, failing to grasp it, falls to the ground. Here we see a distinct neurotic tendency ; the whole attack simulates one of "petit mal." The two most frequent sources of such attacks are the ears and stomach. When such attacks are due to aural trouble, there exist tinnitus aurium, deafness and sudden attacks of vertigo. Meniere's disease, or labyrinthian vertigo, is often due to the secretion of an irritative liquid, mucus or pus, which, as it increases, and is unable to escape to the throat by the Eustachian tube, causes reflexly an alteration in the circulation, from which vertigo results. When the source is the stomach the case becomes one of gastric vertigo. The story of the present case is about as follows : In the first place, the man has an unhealthful occupation ; he is run down and out of tone. He has probably damaged his stomach by rapid, careless eating ; in addition, he has possibly taken cold in this organ. It has become irritable and distended, thus accounting for the swelling of which he complains. He has palpitation of the heart, due to the reflex irritation of the vagi. He does not drink or use tobacco.

This man has what we term "nervous dyspepsia." Carefully restrict his diet. Give him mush and milk for breakfast and supper, with milk and lime-water to drink. For dinner, allow him meat and one vegetable, seeing that he chews his food properly. He should have no tea or coffee. Medicinally to act on the stomach, we will give him a pill composed of valerianate of zinc, one grain and a half, and the extract of belladonna, one-twelfth of a grain. If the irritation continues, we will order small doses of dilute hydrocyanic acid, two drops in water, with small doses of the ammoniated tincture of valerian. The prognosis is fairly good in these cases.

MEMORANDA.

MEMORANDUM OF A RARE COMPLICATION OF LITHOLAPAXY.[1]

In April, 1890, Dr. B., a well-known practitioner of medicine in southern Delaware, sent his brother to me to be examined for vesical calculus, telling me at the same time that there was reason to fear the existence of chronic nephritis.

Mr. B., aged 40, and weighing 260 pounds, had had frequent urination for some time, with occasional sudden stoppage in the stream during the middle of the act. Exploration with the vesical sound at once revealed the presence of a small stone. He also had a moderately enlarged and indurated prostate, a contracted meatus and an irritable, hyperæsthetic urethra. His urine contained albumin; granular and hyaline casts had been found more than once, though none were discovered at this time.

After a few days' preparatory treatment by rest in bed, quinine, salol, etc., the patient was etherized; the bladder washed out with boric acid solution, four or five ounces being left in; a Weiss lithotrite of large calibre easily introduced (after meatotomy), and the stone promptly caught, being apparently not over half an inch in diameter.

It broke with a loud click, and two of the fragments were then seized and broken. At this time, owing to some hitch in the working in the slide, which annoyed me, I withdrew the lithotrite to inspect it, a gush of fluid following the instrument. Having arranged it satisfactorily, I thought I would evacuate the bladder before re-introducing it and attempted to insert an ordinary small evacuating tube, No. 20, French. It was arrested at the apex of the prostate and would pass no further. Various forms and sizes of tubes were then tried, as were silver catheters, sounds and lithotrites of different dimensions, but all without avail. The least attempt at force caused the point of the instrument to be strongly deflected, usually to the left side, occasionally to the right, but by no manœuvre could I succeed in getting anything into the bladder. Forced injections of oil and of water, urethral forceps, backward rectal massage of the prostate were tried perseveringly, as it seemed evident that the difficulty arose from impaction of a fragment at the prostato-membranous junction, but all these measures were without avail.

Large, blunt instruments were used in the effort to force this supposed fragment back into the bladder, but it could neither be seized nor dislodged, nor indeed could it be definitely or distinctly felt. A small Nélaton catheter was finally passed into the bladder, but was the only instrument of any description which could be made to enter. The patient was put in bed, full doses of quinine and salol were given, and he was kept on milk diet. For a few days there was

[1] Read at the Fourth Annual Meeting of the American Association of Genito-Urinary Surgeons, held at Altoona, Pa., June 3 and 4, 1890.

considerable difficulty in urination, with smallness and deviation of stream and much tenesmus. Calculous dust and gravel passed in slight amount. On the fourth day, while straining, he suddenly ejected a fragment of uric acid stone, as large as the end of one's thumb, after which urination was easy and painless, and, with the exception of an irregular urinary fever, his symptoms disappeared. On May 26, a lithotrite was introduced into his bladder, two very small pieces were found and crushed, and the patient went home quite well. There was no recurrence of symptoms. A re-examination in April, 1891, showed the bladder to be entirely empty.

The incident has seemed to me worthy of mention here, because, on *à priori* grounds, it might be expected to be of frequent occurrence, and yet, as little or no mention is made of it in treatises on litholapaxy, or in reports of large numbers of cases, it must be very rare or else very easy to manage. It is true that, as a rule, a considerable degree of pulverization is effected before the lithotrite is withdrawn at all, but it is not uncommon to remove the instrument several times during the crushing of a large calculus. Median lithotomy was considered, but was rejected on account of the fact that there had been an understanding with the patient that no cutting operation should be performed. The circumstances were not favorable for that operation at any rate. The patient weighed 260 pounds; the perineum was of great depth; no stone could be definitely felt at any point, either by finger or instrument; the prostate was enlarged and indurated; no guide could be passed beyond the apex of the prostate. The usual instruments for extraction failed utterly, as, indeed, they might be expected to, when the fragment could not be definitely located, and especially when no instrument could be passed beyond it. The complication never having occurred to me before, I have looked with some interest for the experience and teachings of others, but with little success.

Sir Henry Thompson does not mention it; I can find no allusion to it in the writings of Guyon; Keyes says, "Impacted fragments in the urethra—one of the horrors of old-fashioned lithotrity—should never occur with this operation. If the bladder is left empty of fragments, such a complication is obviously impossible." This does not, however, cover the possibility of the impaction occurring during the operation. He adds: "Should it ever occur, the foreign body may be pushed back into the bladder or removed from the urethra with a Thompson's dilator or by one of other methods." Freyer considers the possibility of impaction occurring from the withdrawal of the evacuating tube with a fragment sticking in its eye, which may catch in the mucous membrane and remain in the urethra. He says: "Should a fragment get impacted in the urethra, how are we to deal with it? This is an accident that has never occurred to me. . . . Still, it is an accident that has to be reckoned on. Should it occur, the fragment may be removed by long urethral forceps."

Duplay, speaking of calculi arrested in the deep portions of the urethra, says that, to such stones, propulsion of the calculus into the bladder is naturally suited, and "is easily accomplished with the help of a large metallic sound, with which the foreign body is gently pushed back until it falls into the bladder."

On the whole, I received but little help from literature in endeavoring to decide whether or not my course had been judicious and in accordance with precedent, and I have therefore ventured to call the attention of this Associaton to the subject, in the hope of acquiring further information.

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CASE OF ABDOMINAL SARCOMA, INVOLVING LARGE INTESTINE—RUPTURE, COLLAPSE, DEATH.

The following case will be found of interest, because of its rarity and, more especially, because of its diagnostic value:

T. W., aged 6 years; white; born in Philadelphia of Irish parents. His mother and father are both living and in sound health. He has had seven sisters and two brothers, all of whom are living and well, except two sisters, who died in infancy, one of cholera infantum, the other of sunstroke. On his father's side he has a great-grandfather, a grandfather and numerous aunts and uncles living and hearty. Mother's family history is very unsatisfactory, but, as far as is known, shows, like his father's, no tuberculosis or cancer or other malignant disease. Until the past few months he has been perfectly well, except that one year ago he had a moderate attack of measles, which was uncomplicated and followed by no sequelæ. He seemed to recover rapidly and completely. No history of injury can be elicited. During the past year he has gradually lost in weight and strength, and has at times grown decidedly droopy. His appetite has varied greatly, being now absent, now ravenous. Three weeks ago he began to complain of pain in the left side of his abdomen. This returned at long intervals, and attracted the attention of his parents to his abdomen, where they found two hard lumps. During these months he has suffered much from sleeplessness, due, apparently, for most part, to the abdominal pain; for he would awake startled out of a sleep in which he seemed to dream a great deal, and immediately place his hands upon his abdomen. He has been noticed constantly to sweat a great deal about his head and shoulders, and especially during sleep. Fever has not been suspected, hence, if present, not detected. Bowels have been costive and moved once in three or four days. His urine, for weeks, has been cloudy, small in quantity and passed only two or three times in twenty-four hours.

Physical examination reveals a boy of average height, pale and emaciated, his wasted legs and arms being in marked contrast with his abdomen, which is considerably distended. It may be well to note that this abdominal enlargement is irregular, being greater on the left side. Beads of sweat stand out upon his face and forehead, an index of great weakness and of pain, for he presents also an anxious countenance and corrugated brow. The superficial veins of the chest and abdomen are distinctly distended.

The head is cool and moist; pulse small, feeble, rapid and irregular. There is slight enlargement of the inguinal glands; none of the cervical or axillary. Palpation of the abdomen gives two tumors to the left of the median

line, hard, resisting, very painful to the touch; at once, evidently, solid masses in the abdomen. The lower one extends downward to Poupart's ligament; on the right, to a line midway between median abdominal line and the crest of the ilium; upward, midway between the pubis and umbilicus, and is slightly movable. The upper one is in the upper part of the left side of the abdomen and occupies the position usually taken by an enlarged spleen. It is hard, and especially so at the lower right border, where it is very hard. It is larger than the other, is ovate, and has its axis oblique to that of the body. It is also very tender to the touch and is slightly movable, but its motion cannot be demonstrated to cause the movement of the other. It does not move with the movements of the diaphragm. Percussion gives marked dulness over both tumors, and over the remainder of the abdomen a peculiar boggy sound. Neither palpation nor percussion, nor the two combined, show us that the two masses are connected, hence the probability is that they are two distinct tumors. No actual fluctuation can be had. This, combined with a boggy sound on percussion and the lack of changeable dulness on changing the patient's position, makes it quite probable, also, that there is not any considerable fluid in the abdomen. Careful examination of the chest shows lungs and heart normal, while the mediastinum gives an entirely negative result.

The urine, while being passed, looks milky. It is small in amount, of a putrid odor, alkaline and gives a large amount of dense, white precipitate of amorphous phosphates, with some uric acid crystals. Specific gravity 1028; small amount of albumin; a few granular and epithelial tube casts; no sugar.

The first conclusion in arriving at a diagnosis was that it was no one tumor of either liver, spleen or kidney. As has already been seen, palpation and percussion showed no connection between the two easily-felt lumps, and it was thought most probable that we had two distinct tumors. This conclusion reached, it could, of course, be a growth of no one organ, as the kidney or spleen. That the lower was not a tumor of the kidney could not be said; but that the upper was not of the spleen seems certain, from the fact that the usual splenic dulness could be found, and between it and the tumor lay the stomach, evidently pushed up by this abnormal mass; while in case of enlarged spleen the stomach lies below and is pushed down by it. Then, too, had it been an enlarged spleen, being movable, it would have risen and fallen with the movements of the diaphragm in respiration, which it did not. In addition to all this, it bore no relation to the spleen in shape, and its long axis lay at right angles to that usual to an enlarged spleen.

That it was not an enlarged liver, or a growth of the liver, was evident, because it could be shown neither by palpation nor percussion to have any connection with the liver; and this was confirmed by the stomach lying between it and the liver, which gave its normal area of dulness on percussion; and the fact, also, that it did not move with the diaphragm. In addition, there was no evidence of disturbed hepatic function.

The kidneys were found to be in their normal place, and while the urine showed evidence of disease, it was only of a moderate catarrh; it did not contain evidence of broken-down kidney structure or pus or blood, as is sometimes

found in malignant tumors of this organ. The large amount of phosphates indicated some wasting disease somewhere in the economy, and this, combined with the emaciation and exhaustion, made it very certain.

If not a tumor, or tumors, of the kidney, spleen or liver, what, then, were these masses? Most probably tumors of the omentum, intestines, mesenteric or deep glands. Being satisfied of this, there seemed to us but one question left to solve, viz., are these sarcomatous or carcinomatous growths, or are they large tubercular or scrofulous glands and the case one of "tabes mesenterica"? In cases of scrofulosis of the cervical or mesenteric or other glands, there is usually precedent frequent catarrh; but in this case we have no history of catarrh, not even of catarrhal diarrhœa, which is so very common in cases of tabes mesenterica. In this case the tumors are both decidedly to the left of the median abdominal line, while in "tabes" they are nearer the centre of the abdomen. There is no enlargement of the cervical or axillary or other glands, except, to a slight extent, the inguinal. The lungs present no evidence of tuberculosis. These facts, combined with the comparatively short duration of the case, its severity, the large amount of pain and tenderness, the only moderate amount of emaciation and want of a knowledge of fever, which is so very often present in "tabes," confirm the opinion that the case was one of malignant disease. Having concluded that it was a case of malignant disease, the probable nature of the growths became a query. No definite conclusion was reached, but because of the rarity of carcinoma in childhood, it was thought most probable that they were sarcomatous.

On January 21, 1891, nine days after this history was taken, our patient died in collapse. A *post-mortem* examination was made by his family physician, who was not well versed in morbid anatomy, and a certificate with the diagnosis "tabes mesenterica" given. I learned that there were numerous masses which looked like enlarged mesenteric glands, besides the two large masses, which seemed to him like numerous glands, bound closely together by organized lymph, and probably due to a local peritonitis. He also said that the intestines were "mixed up" in the two large masses. The lower tumor had burst and discharged its contents into the peritoneal cavity, thus causing collapse. Both large masses seemed to be of the same nature. He thought the one that had ruptured was a broken-down gland. I secured this and found it to be a portion of the large intestine with its walls much infiltrated by some pathological element. The cavity was lined by intestinal mucous membrane, and this covered here and there by small portions of fæces. The walls were two or three inches thick, except where rupture had taken place. Here it was thinner and had undergone necrosis.

Sections of this tumor, taken from various localities in it, were sent to Dr. Allen J. Smith, of the University of Pennsylvania, and found by him, as they have since by others, to be from a small round-celled sarcoma. The tumor and sections of it are still in my possession.

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EDITORIAL.

THE KYPHOTIC PELVIS.

AMONG rather primitive people, like those of Hungary, in whom pelvic deformities are not so common as they are, for instance, among the Italians and the Austrians, there is some excuse for ignorance of pelvimetry; for the general practitioner, especially in the country, may not in many years be called upon to estimate the size of the pelvic canal. As civilization becomes more complex, however, developmental anomalies are more frequently seen.

This country, in its astonishing growth and development, has ceased to be an agricultural community, in which the people are well fed and well formed. The urban population has grown at the expense of the rural, and vast numbers of people live and work in conditions incompatible with normal physical growth and well-being. One result of this change in our civilization is seen in the increasing number of deformed pelves among child-bearing women, until at present the proportion of contracted pelves, in the Eastern cities at least, is almost as large as it is in Germany or England. It has become essential, therefore, that even the general practitioner should know the possibilities and limitations of pelvimetry before assuming the responsibilities of the obstetrician. In those parts of the world where pelvimetry is best understood and most

assiduously practised, it is recognized that the exact measurement of a given pelvis is often difficult, especially if there is lateral or oblique contraction. The antero-posterior diameter, fortunately, is easily estimated with a wonderful degree of accuracy if one takes into account the height of the symphysis and its angle with the conjugate. It is this measurement which is most frequently required, for the flat pelvis of various kinds constitutes the overwhelming majority of deformities which complicate labor. A practitioner of much experience, however, will surely encounter at some time a kyphotic pelvis with lateral contraction, if not oblique deformity as well. In such a case it is necessary, before labor, to estimate the degree of resistance which the fœtus will encounter during its expulsion. This is not always easy. Any one with a slight knowledge of pelvimetry can take the distance between the tuberosities of the ischia and so learn the transverse diameter of the outlet, which is usually the seat of greatest contraction; but this measurement does not always tell the whole story.

If there is scoliosis as well as kyphosis, the diameters of the inlet may be diminished more than appears by external measurements, and to a greater extent than can easily be estimated by an internal examination. There is also a possibility of exaggerated compensatory lordosis in the lumbar vertebræ, which may be a more serious obstruction to labor than the pelvic deformity itself. We have seen a case, for example, in which this condition necessitated Cæsarean section. The fœtal spine was bent at a right angle, from the fact that the projecting spine of the mother was firmly wedged in the child's abdomen, between the thorax and pelvis. It should be remembered, on the other hand, that, as a rule, labor in a kyphotic pelvis, if the deformity is not excessive, is easier than one would expect from the appearance of the woman and the size of the pelvis.

At the worst it is usually a simple matter, without much danger to the mother, to do craniotomy at the inferior strait. The late Dr. Taylor, of New York, delivered successfully in this way a woman whose transverse diameter at the outlet was less than two inches. If, however, there is marked scoliosis with oblique deformity of the inlet—if the whole pelvic canal is much narrowed laterally; if the outlet is so contracted that a living child cannot pass—it would be better, in view of the improved prognosis of the operation, to do a Sänger-Cæsarean section, if the consent of the family and patient can be secured. Unfortunately, the indication in these cases is usually relative and not absolute, so that the physician is bound to offer the choice between craniotomy and Cæsarean section, and, alas for human nature, the husband and wife will almost always demand the former if the case is put to them truthfully.

BOOK NOTICES.

PRINCIPLES OF SURGERY. By N. SENN, M.D., Ph.D. Illustrated with 109 wood engravings. F. A. Davis, 1890.

This book is evidently founded on Senn's brilliant papers upon surgical bacteriology. It will prove exceedingly valuable in the diffusion of more thorough knowledge of the subject-matter among English-speaking surgeons. Senn has collated all that is best in the writings of the most eminent German teachers and investigators, and has applied these facts to illustrate the fundamental principles of surgery. As in the case of all his work he has done this in a truly admirable manner. The great majority of our text-books pay little attention to the scientific basis upon which surgical knowledge should rest. This is in marked contrast to German text-books. Thus, by Koenig, Tillmann and others of most distinguished German surgeons, more attention is paid to pathology, bacteriology and general surgical diseases than is devoted to any other single portion of the work. Senn, in his methods, is a close student of the Germans. His principles strongly suggest Tillmann's first volume, excepting that the latter writer has possibly been less accurate and more general in his teachings. Nowhere is there room to criticise the accuracy of Senn's statements, and everywhere is there evidence of a thorough study of the best work of the most eminent men. Thus, on the subject of transplantation, he enunciates what is certainly the belief of the most distinguished investigators, though it is not accepted by the great bulk of the profession—namely, the fact that regeneration takes place exclusively from pre-existing tissues, and that transplanted tissue acts simply as a bridge. In this relation the use of decalcified bone tubes in nerve sewing is warmly commended.

In considering the subject of inflammation, he thinks that it is exceedingly important to draw a distinct line between tissue changes, characterized by regenerative processes, uncomplicated by the action of pathogenic bacteria and true inflammation, which is always caused by the presence of one or more pathogenic microbes. For the first series of changes he proposes the name *regeneration*, whilst to the latter, exclusively, *inflammation* should be applied. This would certainly be a most desirable change in nomenclature.

The poultice, of course, he utterly condemns, and would substitute for it antiseptic fomentations. The book throughout is worthy of the highest praise. It should be adopted as a text-book in all of our schools. To those familiar with the German language many of its teachings and principles have been long known; but to the great bulk of the profession it will come as an enlightener.

TEXT-BOOK OF MEDICAL JURISPRUDENCE AND TOXICOLOGY. By JOHN J. REESE, M.D. Third Edition. Revised and enlarged. Philadelphia: P. Blakiston, Son & Co., 1891.

The author has condensed within a space convenient for students practically all the essentials of medical jurisprudence and toxicology. It is difficult to praise too highly the manner in which this work has been done. Even for a layman, the subject-matter has been so handled as to be clear and interesting; for the student the work is exactly what he wants. Professor Reese is par-

ticularly happy in literary style. This combination, with his profound knowledge of the subject he so easily discusses, has enabled him to write a text-book which is unrivalled. Of course, in such a work certain points are necessarily omitted; thus it would seem appropriate to discuss the medico-legal aspects of the gonococcus. Other bacteria may also bear important relations to the legal aspects of certain cases. Such omissions necessarily occur in a work of this size, and, far from criticising, the reviewer is inclined to offer him his heartiest congratulations upon this masterpiece of text-book writing.

SURGERY: A PRACTICAL TREATISE, WITH SPECIAL REFERENCE TO TREATMENT. By C. W. MONSELL MOULIN, M.A., M.D. Assisted by various writers on special subjects. Philadelphia: P. Blakiston, Son & Co., 1891.

This rather cumbersome volume of nearly 1,200 pages evidently has been written by a practical teacher, and represents a fairly faithful effort to portray modern surgery as it is known to well-versed hospital surgeons. The success attained is only moderately satisfactory. The treatment which, according to the title, is a special feature of the book, is far from meeting the requirements which should be fulfilled by a standard guide. The directions are vague and at times misleading. Thus Nothnagel's test, *i.e.*, the alleged action of a crystal of sodium chloride in causing reversed peristalsis, is accepted as a conclusive method of determining the proximal and distal extremities of a divided gut. The use of iodoform in tubercular arthritis receives but casual note, and glycerine or ether is advised as the excipients in making an injection mixture. The supreme value of iodoform-olive-oil injections has been so well shown that the matter would seem now to be definitely settled. Senn's method of lateral apposition is described but not pictured. No mention is made of primary anæsthesia, and both the dangers which may occur during ætherization and the precautions to be observed are practically ignored. The few paragraphs devoted to antiseptics and their applications are so general and vague as to be absolutely worthless. The casual manner in which syphilis, especially the treatment, is treated, would scarcely satisfy a student's requirements. Conceptional syphilis and immunity are not to be found in the index.

On the other hand the author has collected a vast fund of information, such as is generally known to the few who are *au courant* with the literature of the day. Kocher's method of reducing luxations of the shoulder-joint is clearly described and admirably illustrated. The chapters on fracture, barring the treatment, are worthy of high praise. Fournier's brilliant papers upon syphilis of the tongue have been carefully abstracted, and throughout the whole book can be seen records of a widely-read man.

The American surgeon wants clear, keen, dogmatic teaching. Where he follows, he must feel the firm grasp of a confident hand. Uncertainty and vagueness, generalization, even though having for their basis the scholar's knowledge, are quantities which appeal to him not at all. Moulin's work is, we fear, not destined to displace any of the text-books on surgery used by people of the Western Hemisphere. It is none the less a valuable addition to surgical literature.

SURGICAL BACTERIOLOGY. By N. SENN, M.D., Ph.D. Second Edition. Thoroughly revised. Philadelphia: Lea Brothers & Co., 1891.

Bacteriology has, within a few years, become a subject of immense importance to the surgeon. The obscurity which, for centuries, surrounded the infectious surgical diseases, has been removed by the rapid development of

this branch of medical science, and their true pathology firmly established. In the cases of many of these affections the pathogenic micro-organism has been indisputably isolated. The specific cause of the balance but awaits discovery.

In the volume under consideration, Dr. Senn has collected the results of the work of the ablest men in this line, to which he has added the record of his own investigations. As Dr. Senn remarks in his introduction, he has aimed to represent the ideas of each author, without any attempt to harmonize their various opinions.

A very curious fact in connection with this subject, and one that seems to promise a useful service when better understood, is the antagonism which exists between certain micro-organisms. While this list is but small at present, the field is comparatively a new one, and there is no reason to doubt but that the number will increase with future research. It does not seem too much to hope that this property may enable us, at some future day, to treat infectious diseases by inoculation, and that they may even be prevented by the same means.

Although a number of experimenters have described the bacillus of syphilis, Dr. Senn, while having implicit faith in its existence, does not think the claims so far well founded. He also considers the theory of the microbic origin of tumors improbable.

The book throughout is exceedingly interesting, and a most valuable addition to surgical pathology.

INTERNATIONAL CLINICS. A quarterly of clinical lectures by Professors and Lecturers in the leading medical colleges of the United States, Great Britain and Canada. Edited by J. M. Keating, M.D., J. P. Crozer Griffith, J. Mitchell Bruce, M.D., F.R.C.P., and David W. Finlay, M.D., F.R.C.P., April, 1891. Philadelphia: J. B. Lippincott Co.

It is proposed to make this periodical a complete post-graduate course of medical instruction. In attempting to fulfil such a purpose, the editors are responding to a demand which is constantly growing in the profession. The enlargement of the post-graduate schools and the increasing courses at the undergraduate colleges attest this statement. This field of medical work has been occupied largely by the medical journals, which, from their nature and range, are especially fitted for the work. This quarterly is one of the first encroachments on this sphere of the medical newspaper.

Doubtless there is no genuine substitute for the clinical lecture. Actual presence at the clinic, the evidence impressed by the eye, the time devoted to the amplification of the cases, with all the surroundings make advantages similar to those which are possessed by eye-witnesses in other fields of work. Still there is in such a publication a range of lecturers and subjects, which no post-graduate student could hope to hear and see in any reasonable length of time.

The clinical lecture is undoubtedly the truest, safest and surest method of medical instruction. In the ideal clinic the lecturer is placed in the relation of a teacher to his students. His statements should be dogmatic and direct, reaching the essence of the case before him without prolixity, obscurity or indecision. The simplest and most reasonable views in diagnosis, pathology and treatment are the best for the student. These views should be impressed thoroughly, making the groundwork to which can be added, when firmly impressed, diverse opinions of good authorities and the interesting discussions found in medical history. As all true medical men are students throughout their entire career, such lectures are as suitable to them as to the undergraduate. To carry out such work the lecturer must be a man of wide, practical experience, sound conservative views, not subject to hobbies or easily

influenced by waves of medical enthusiasm, and possessing necessarily an easy, steady method of delivery.

Clinical lectures should be especially complete in details. A careful, minute description of an operation, of a method of examination, of the steps in obtaining a diagnosis, of the various phases in disease, etc., should always be given without diffuseness. It is the possession of the actual minutiæ of such methods and phases which constitutes "practical experience." How often, in looking up the details of some proposed procedure, or in studying some pathological condition, is the medical man annoyed and disappointed to find the writer has slurred over many points or left out steps, the correct performance of which are a *sine qua non*.

The editors of this publication have been singularly fortunate in obtaining so much valuable material which contain many of the essentials enumerated above. If the subsequent issues of the quarterly are as good, the publication will demand success everywhere. Frequently the favorite topics of different lecturers have been selected. In a few instances the lectures have been written especially for the quarterly. A suggestion is made to the editors, given for what it is worth, that a systematic effort to cover certain fields by a series of clinics might prove even more valuable than miscellaneous selections of random lectures. This work will substitute no other publications of any sort; it is rather a course of supplementary reading, of use to the practising physician. Thirty-six clinical reports were given, each one by a different lecturer. This shows the range and scope of the work.

Twelve Lectures on the Structure of the Central Nervous System. By Dr. Ludwig Eclinger. Translated by Dr. W. H. Vittum, and edited by Dr. C. Eugene Riggs. F. A. Davis: Philadelphia and London, 1890.

These lectures, originally delivered before the physicians of Frankfort, form an excellent handbook for the student, whether he be graduate or undergraduate. The author gives especial attention to the study of the paths of nerve bundles from periphery to cortex. This, the most complicated and one of the most important questions in nervous anatomy, he is the better able to handle because he is himself an investigator. The spinal cord possibly does not receive quite as much attention as it deserves. At the beginning is a short historical sketch, and scattered here and there are references to the discoverers of important facts. No attempt has been made to write an exhaustive treatise, and disputed points, about which we know nothing, are wisely omitted. Where occasion arises, some space is given to physiology. There are a few typographical errors, as, for example, on page 47, where in describing the fissure of Sylvius it is said to have "a long anterior and a short posterior and ascending branch." The book is neatly made, but on many of the plates the German names have been allowed to remain, while at the bottom English translations are given. For the English reader this is a sad inconvenience, while it will increase his knowledge of German very little.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND J. HOWE ADAMS, M.D.

Experimental Typhoid Fever.

Gilbert and Girode (*Le Mercredi Medical*, May 6, 1891) call attention to the fact that animals inoculated with Eberth's bacilli have behaved differently in the hands of various experimenters. Gaffky observed no pathogenic action. Sivotinni and others have observed an acute septicæmia without multiplication of the bacilli, while Frænkel and others have observed a disease closely resembling human typhoid fever. The writers detail experiments on two guinea-pigs inoculated with Eberth's bacilli. Both animals had diarrhœa and loss of flesh and died, one on the fourteenth the other on the thirty-second day. The *post-mortem* examination showed inflammation of Peyer's patches and ulceration of the mucous membrane of the cæcum, with enlargement of the lymphatic glands. Bacilli were found in various situations. Tubes inoculated with splenic pulp and contents of the intestine showed growths of Eberth's bacilli.

Nature and Treatment of the Senile Heart.

Balfour (*Edinburgh Medical Journal*, June, 1891) considers senile heart as synonymous with gouty heart. Where there is a pronounced gouty diathesis, he considers colchicum in connection with a heart tonic as the best possible medicinal treatment. Necessarily all heart disease found in the old is not considered as senile in the sense of its being a product of old age. Many have heart disease that has existed from youth. Many cases of breathlessness in the old with heart lesions are really dependent upon anæmia and not upon heart lesions. Rest, the author considers, is a most important factor in the treatment, many cases recovering their usual vigor by rest alone. Irritability, the author considers, is the first sign of a senile heart; fits of palpitation and slight irregularity come on without any great exciting cause. Many cases may feel only a slight uneasiness in the cardiac region and suddenly end fatally in an attack of angina. Attention to the force and rhythm of the pulse is of utmost importance. If tension is low, it is probably due to anæmia. The drain on the system must be found and corrected. If the pulse is hard and rigid, it is probably due to atheromatous change or renal complication. In cases of low tension, rest with exercise *never* pushed to exhaustion. Diathetically the author divides senile hearts into two groups—those which are over weight without many signs of cardiac dilatation, and those which are below weight and suffer much from cardiac disturbances. In all cases, not less than four hours should be allowed between meals. No solid food should be taken between meals. All invalids should have their most important meal in the middle of the day. Alcohol should never be used constantly. Tobacco should be debarred when used to excess, though one cigar may be used in the day. The drugs the author considers of value are digitalis first, and to be carefully used so as not to get the digitalis poisoning; he prefers the tincture in ten-minim doses three times a day. Strophanthus he considers good, but more uncertain than digitalis. Strychnia is of great value, and may be in itself a

sufficient heart tonic. Arsenic is indispensable, and is as useful as digitalis. Iron is a positive necessity where there is anæmia. For the relief of high blood-pressure, such as is found in angina, amyl nitrite is useful; nitroglycerine can be used more constantly. When high pressure is persistent, two or three grains of potassium iodide three times a day are of the greatest value. In all cases, it is most important to keep the bowels regular. Vichy water is efficient. Flatulence must be relieved, and a combination of pepsin with strychnia and arsenic is advised.

Uric Acid and Phosphatic Stone in the Same Individual.

Graux (*L'Union Medicale*, No. 64) reports the case of a man who passed uric acid stones after severe renal colic on the left side. Soon colic appeared on the right side. Sometimes it was found that phosphatic stones were passed, sometimes uric acid. After years it was found that the uric acid stones always came from the *right* kidney, and the phosphatic stones from the left. The change from uric acid to phosphatic formations on the left side was due, according to the author, to the alkaline treatment which the patient was first given.

Pain in Heart Disease: Conclusions from the Study of 483 Cases.

Nothnagel (*Zeitschrift für klinische Medicin*, Vol. XIX, No. 3) tabulates 483 cases of valvular disease of the heart with reference to pain. Lesions at the aortic orifice were most frequently accompanied with pain, while lesions at the mitral orifice were the least affected. Sixty per cent. of the cases of regurgitation were accompanied by pain, while only seven and one-half per cent. of the cases of mitral regurgitation had painful attacks. Curiously enough the combination of mitral regurgitation with aortic regurgitation seems to reduce the percentage of painful cases, only eighteen per cent. of such cases having painful attacks. He calls attention also to the frequency of pain in cases of disease of the heart-muscle without valvular disease. He holds that in a case where the diagnosis is uncertain, the occurrence of pain in the cardiac region, while, of course, not making the diagnosis sure, is of the greatest moment in pointing toward heart disease. Cases of arterial sclerosis, with cardiac hypertrophy, are much more frequently accompanied by pain than other forms of this latter class.

The Diagnostic Import of Slow Heart.

Taylor (*Lancet*, June 6, 1891) defines slow heart or bradycardia as that state of the heart's action in which the number of beats does not exceed forty per minute. It may be a symptom of grave disease, or may be present as the only abnormal symptom. In health slow heart is more frequent in males, probably more frequent in old age. It frequently occurs in persons of great strength and those who are very tall. There is a certain class of cases which the author describes as functional, where the slow action is temporary and apparently dependent upon some disordered condition of the stomach. In disease, the tendency is to accelerate the heart's action and not to slow it. Probably the most frequent cause of slow heart is some affection of the heart itself, but slowness of action is not sufficient ground on which to base a diagnosis of heart disease; there must be, in addition, irregularity of action and loss of power. Valvular disease *per se* does not produce slow heart, but the morbid action is rather an indication of degeneration of the heart-muscle. It is frequently dependent upon disease of the coronary arteries. It is a not infrequent occurrence in anæmia and chlorosis, due probably to the high arterial tension. After typhoid fever, it is common and more frequent in children, and after an especially severe attack. The great majority of nervous cases are probably due to some organic lesion of the centres or vagi; a peculiarity of this set of cases is that the beat is usually strong. Frequently the abuse of tea, coffee and tobacco is responsible for some attacks of slow heart. Potash salts, especially the nitrates, have also an inhibiting influence.

Naphthalin in Typhoid Fever.

Wolff (*Medical News*, May 23, 1891) reports 100 consecutive cases of typhoid fever, treated with naphthalin, chemical antipyretics and cold sponging. The mortality was ten per cent. The author does not consider naphthalin as having any direct influence on the temperature, but thinks it has a decided inhibiting influence on the morbid process. He thinks some of the cases were aborted by the use of the drug. The paper concludes with the statement that naphthalin is not to be used as the sole treatment of typhoid fever, but that the toxæmia should be combated by antipyretics, preferably cold bathing.

Acetonuria Resulting from Indigestion.

Lorenz (*Zeitschrift für klinische Medicin*, Vol. IX, Nos. 1 and 2, 1891), in an exhaustive review of the literature of acetonuria and an analysis of eighty-one cases of disturbance of digestion either from disease of the gastro-intestinal canal or reflex, has arrived at the following conclusions: That acetonuria from indigestion must be added to the previously considered forms of acetonuria. In cases of indigestion, the difference between the clinical symptoms of acetonuria and diaceturia is but slight. Albuminuria does not depend upon the effect of acetone or acetic acid. Acetone has been demonstrated in the contents of the stomach and of the intestine almost constantly in primary diseases of the canal; but in secondary or nervous diseases it has seldom been found.

Hygienic Treatment of Obesity.

Chéron (*L'Union Medicale*, May 21, 1891) gives the experiments by different operators which go to prove that the fat of the organism is derived from the fat, the albuminoids and the hydrocarbons of the food. He details at length the regimen of numerous authors. The Banting treatment, which, as is well known, consists in an increase of the albuminoids with decrease of fat and hydrocarbons, with as little liquid as is possible, is considered efficient but very debilitating, and is compared with what the author designates as the physiological treatment of G. Sée, which consists of four ounces of nitrogenous foods, with nine to eleven ounces of lean meat and albuminoids, three to six ounces of neutral fats, ten ounces of hydrocarbons, and ten ounces of sugar. Liquids are increased, but alcoholics, especially beer, are forbidden, and their place is taken by coffee and tea. He recognizes, as equally important with the food, exercise. A gymnastic exercise especially recommended for those with pendulous abdomens is to stand with the back straight against a wall, at the same time the arms are raised to the side of the head, describing a semicircle upward and backward. He considers this more efficient than walking. In the anæmic obese, he advises great caution as to the amount of exercise allowed. It is necessary to accelerate the assimilation of the food. This is done by cold baths, frictions and salines. The medical treatment consists of purgatives and alkalines. Small doses of iodide of potassium are very useful. He finally divides the obese into two classes—the vigorous and the feeble. The former are treated vigorously and the latter more carefully. When the patient is past 40 years, has a degenerated heart, or is anæmic, the vigorous cure has an enfeebling effect on the central circulating organs, which is the chief source of danger.

On the Existence of Physiological Albuminuria.

Jasiewicz (*Bulletin et Memoire de la Societe de Medicin Fratique de Paris*, May 1, 1891) details a case under observation for five years with slowly increasing albuminuria, lower specific gravity than normal, urea decreased, chloride of sodium decreased. Never any tube casts or epithelium found. At the end of the five years the patient appeared in perfect health, except for the constant albuminuria. The author, together with most of his critics, considered the case as one of slowly beginning Bright's disease, and also believes that physiological albuminuria does not exist.

Fatal Tetany as a Sequel of Dilatation of the Stomach.

Collier (*Lancet*, June 6, 1891) quotes six cases in which the socalled tetany occurred, with a dilated stomach as the probable cause. All the cases had suffered from severe vomiting. All were attacked with spasms of certain muscles, especially those of the extremities. In all the muscular spasms temporarily disappeared to recur after a longer or shorter period. Five were fatal. In three of the cases, the introduction of the stomach tube was the probable exciting cause; excessive vomiting was the cause in the other three cases.

Estimation of the Actual Number of Bacilli in Tubercular Sputum.

Nuttall *Bulletin of Johns Hopkins Hospital*, May and June, 1891) describes an original method by which it is possible to count accurately the number of bacilli in sputum. The method is briefly as follows: All the sputum of twenty-four hours is caught in covered, clean, conical glasses and measured. A varying amount of five per cent. solution of caustic potash solution is then added, and after the sputum becomes perfectly fluid it is diluted with water. The prepared sputum is then transferred to the bottle attached to an ordinary "milk-shake" apparatus and agitated briskly for five minutes. It is allowed to stand until it becomes homogeneous, is again diluted and shaken—allowed to stand for two to four hours and again shaken. The sputum is then transferred to a burette, having a fine dropper at one end and a stopcock and mouthpiece at the other. It is then dropped on cover-glasses, and each drop on a cover-glass spread by means of a turntable and platinum needle. Each drop is then surrounded with a ring of lamp black, mixed with serum and covered by means of a spray with a delicate film of serum. The drop is then colored with fuchsin and decolorized with a dilute solution of sulphuric acid and alcohol used alternately. The black ring enables one to focus more easily, and relieves the strain on the eye, caused by focusing on colorless or barely-stained objects. By means of an eyepiece diaphragm, with a hair line, all of the bacilli in each of a number of drops are counted. By determining the number of drops in each centimetre of the sputum, and the quantity of sputum, the whole number of bacilli can be easily reckoned. By examining sputum which has been allowed to stand at ordinary temperatures, it is concluded that the bacilli *increase* in such sputum.

The Non-specific Treatment of Pulmonary Consumption.

Mays (*Boston Medical and Surgical Journal*, June 4, 1891), after proving to his own satisfaction that pulmonary consumption is non-specific and not contagious, sums up what he considers the proper treatment for the disease as follows: Cases should be in a properly regulated institution. They should have *rest* and never allowed to become exhausted under any circumstances. Nutritious food in concentrated forms, reduction of high temperature with antipyrin, phenacetin and antifebrin, checking cough and diarrhœa. By the use of such methods in institutions, the author claims pulmonary consumption to be the most amenable to treatment of any chronic medical disease.

Intravenous Injection of Normal Salt Solution in Anæmia.

Thomson (*Deutsche medicinische Wochenschrift*, May 7, 1891) cites twelve cases of acute anæmia in which injections of salt solution, either intravenous or intraperitoneal, were used. Eight of the cases died. He concludes that intravenous injection is preferable to either subcutaneous or intraperitoneal, and that while it is a valuable agent, it is frequently not sufficient to save life, and in such cases should be followed by transfusion of defibrinated human blood. A sterilized six-tenths per cent. alkaline solution of common salt is used. A glass irrigator, fitted with a gum tube, tipped with a silver catheter, is filled with one to two quarts of this solution; the arm is made aseptic, a ligature thrown around the upper part of the arm, and the distended median basilic vein exposed. Two ligatures are then passed under the vein and the vessel is ligated with the peripheral one. Care being taken that the tube is entirely filled with the solution, the catheter is introduced through a slit in the vein and

retained there by the upper ligature. The liquid is allowed to flow slowly, due watch being kept on the pulse and respiration.

Sandalwood Oil as a Remedy for Obstinate Cough.

Curtin (*Philadelphia Hospital Reports*, Vol. I, 1890) discovered accidentally that santal oil is a successful alleviant for some obstinate coughs. In the first stage of phthisis the remedy gave comfort and relief, prolonging sleep and improving appetite. In the second and third stages, if well borne by stomach, it greatly relieved the strain of coughing. In the cough of catarrhal pneumonia it acted as a quietant, and in some cases seemed to have a curative effect, liquefying the tenacious secretion. In chronic bronchitis, with asthmatic symptoms, the oil ameliorated all the symptoms in every case. In pharyngeal coughs, dyspeptic coughs with pharyngitis, in whooping-cough and in the dry, hacking cough associated with chronic hypertrophied tonsils, its action was rather uncertain. The explosive, persistent and annoying cough of influenza was, as a rule, greatly relieved by the use of the oil. The oil should be given on loaf sugar, or floated on hot or cold water. It acts both locally and generally. Its advantage over opium in these cases is obvious.

Goitre: Its Pathology, Diagnosis and Treatment.

Berry (*British Medical Journal*, June 13, 20 and 27, 1891) has made an extremely clear and valuable contribution to the subject of goitre.

He makes five varieties: (1) parenchymatous, (2) cystic, (3) fibro-adenomatous, (4) malignant, and (5) exophthalmic. All these varieties, except the last, which stands alone, clinically and structurally, run very much into each other, so that mixed forms are common.

From an extensive study of the probable causes of goitre, Berry concludes that its coincidence with limestone and calcareous sandstone districts everywhere in England is so marked that its appearance as an endemic disease in non-calcareous regions is doubtful. All attempts to produce goitre artificially have failed, from the experiments of St. Lager to those of the present day. Animals drinking solutions of the different forms of salts found in water from these regions, have never shown any sign of goitre, although goitre is common in lower animals in goitrous districts.

Yet the fact that goitre can be produced by water has been proved accidentally from human experimentation. For example, in a regiment of young soldiers, quartered in a goitrous village, there developed, in a large proportion of the men, goitres in a few months or even weeks. Again, a town has received a new water supply, and shortly afterward goitre has broken out in a large number of the inhabitants. Conversely, a village afflicted with goitre has been relieved of that disease by changing its water supply.

There are "goitre-wells" on the continent, to which young men, who wish to be exempt from military service, resort; after drinking this water for a few weeks, they obtain goitres sufficiently large for them to obtain their wish.

Mere hardness in the water does not cause goitre. Berry believes that there is a definite relation between goitre and some poison in the soil, which is carried by drinking water. This may be some mineral ingredient, possibly a salt of some alkali or alkaline earth. From personal experiment he believes that it is not a salt of lime, magnesia or iron. Want of air and sunshine, climatic and atmospheric conditions, heredity, habits and intermarriage, have apparently no share in the causation of goitre.

The effect of goitre on the duration of life is small. In some cases pressure on the trachea causes death. Again, if bronchitis or some similar disease intervenes, the patient has a much smaller chance of recovery.

In regard to the treatment of goitre, the author believes that injections of various substances to excite sufficient inflammation to obliterate the vesicles of the gland, or to have some solvent action on the colloid contents, is not devoid of danger. Iodine is far preferable to every other substance; yet its injection has been followed in a number of cases by death. Internal administration of remedies is briefly discussed and dismissed. The use of setons was wisely abandoned long ago.

A noteworthy series of cases has been reported by Rydygier, of Cracow, in which ligature of the superior and inferior thyroid arteries on both sides has been performed. In sixteen cases the results were excellent, although the operation is a difficult one, and the patients have not been watched yet for a sufficient time. Cystic or fibro-adenomatous goitres are less likely to be benefited by such ligation. Division and resection of the thyroid isthmus have been less successful; the operations have been followed by death in some cases, or the dyspnœa, for relief of which the operation was done, was unimproved. Total extirpation of the gland is not recommended on account of its grave dangers. Partial extirpation has been done by Berry, frequently with good results. *Mukulicz's resection*, which consists in removing the chief part of a lateral lobe, avoiding the recurrent laryngeal nerve by leaving the portion of the gland adjacent intact, has the advantage that it leaves sufficient gland tissue to prevent cachexia strumipriva, avoids hemorrhage and injury to the recurrent laryngeal nerve, and removes the capsule of functionally useless gland tissue. There has never been a return of the goitre in the portion of gland in twenty-three cases operated on according to Mukulicz's method, nor impairment of health, although one case died of recurrent hemorrhage and one required a tracheotomy.

In 550 cases of partial thyroidectomy only six presented symptoms of cachexia strumipriva; five of these recovered and one died. In cases of cachexia strumipriva, transplantation of thyroid tissue, as done by Kocher, Horsley and Fenwick, can be tried. Pilocarpin, jaborandi and nitro-glycerine should be of service. In malignant goitre no operation but tracheotomy is advisable. Kocher has reported the results of 250 consecutive operations on goitre, with a mortality, if malignant and exophthalmic goitrous disease be eliminated, of 0.8 per cent. Cachexia strumipriva is the most important remote effect of thyroidectomy; the existence of this remarkable affection, following the operation, was drawn to the attention of the profession in 1883; its recognition had a great effect in modifying views held in regard to thyroidectomy. Berry believes it can be avoided by performing partial thyroidectomy.

Some New Points in the Treatment of Tuberculosis.

Flick (*Transactions of the Philadelphia County Medical Society*, April 22, 1891) reports his experience in the use of iodoform and creosote in tuberculosis. Iodoform, dissolved in cod-liver oil, or olive oil, is given by inunction; its curative powers are limited to those cases in which the circulation has not yet been cut off from the deposit. Creosote is indicated in the advanced stage of the disease in addition to iodoform. In ten unselected cases treated by this method, one is apparently cured, three are approaching a cure, four have the disease arrested, and two have relapsed. The preparation of iodoform should last for several weeks; its odor, which is not particularly offensive, can be disguised, if preferred, by oil of rose or anise. Slight toxic symptoms follow occasionally, but disappear on intermitting the inunctions. Patients should be rubbed once a day, for one-half to three-quarters of an hour. The front of the chest and the inside of the thighs take up the solution most readily. The creosote is given in hot water, running the dose up to thirty or forty drops a day, watching the urine.

SURGERY.

UNDER THE CHARGE OF

D. HAYES AGNEW, M.D., LL.D., AND J. WILLIAM WHITE, M.D.

ASSISTED BY

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The Comparative Frequency of Stricture of the Urethra in the White and Colored Races.

McIntosh (*New York Medical Journal*, May, 1891) gives a large number of statistics, showing that while gonorrhœa is more common among the colored than the white race, nevertheless strictures due to it are much more frequent among the whites. The majority of strictures occurring in colored patients proved to be in mulattoes or quadroons. Owing to carelessness and more frequent exposure, the negro is more frequently affected with gonorrhœa than the whites, but the disease is undoubtedly milder and more amenable to treatment, often yielding to the simplest remedies. Several tables are given of an immense number of cases occurring in various government hospitals. His conclusions are as follows: The negro is more liable to contract gonorrhœa, but stricture is less liable to result. About one stricture to twenty gonorrhœas is the proportion in negroes, while in whites the proportion is one to six. In mulattoes there occurs one stricture to every ten and nine-tenths cases of gonorrhœa. Treatment lessens the liability to stricture by curing the disease. Injections do not increase the liability to its occurrence. He recommends injections of cocaine to lessen pain and tenesmus, and hydrastine as a most efficacious injection.

Recurrence of Hernia after Operation.

Bull (*New York Medical Journal*, May, 1891), during the past three years, has collected records of 119 cases of relapses of hernia after operations. These applied to the Hospital for Ruptured and Cripples in New York. Satisfactory histories could only be obtained in seventy-three. The ages averaged between 38 and 44 years. The extremes of life have generally been avoided. The duration in Czerny's method, when the pillars of the external ring and integuments are carefully sutured, is almost as great as in the open method. On an average, no method shows an immunity from recurrence for a longer period than fifteen months. Patients remaining without recurrence for a year have no reason to expect to remain so permanently. Not a single case applied that had been cured for five years. The largest and most voluminous protrusions were met with in patients who had worn no truss after the operation. The author always fits a light truss on his patients immediately after the wound is healed. The majority of patients, while not cured, are certainly improved. In from three to six months after operation by the open method the cicatrix is depressed, firm, contracted and dense; later it begins to yield in places or along the whole line, and the hernia bulges directly forward, covered only by the skin and thin, yielding cicatrix. Cases should not be considered cured until after five years. Prompt healing of the wound should be favored and a truss worn from the time the patient leaves his bed.

The Methods of Carrying out Asepsis in Von Bergmann's Clinic.

Schimmelbusch (*Langenbeck's Archiv*, Bd. 42) gives in detail the manner in which the dressings, instruments and brushes used in the clinic of Von Bergmann are rendered aseptic. The use of sublimate and carbolic solutions has largely given way to the employment of moist and dry heat. The efficiency of antiseptic solutions has been overestimated. It has been shown that threads infected with splenic fever contained living germs after fourteen days' immersion in a five per cent. carbolic solution, also that they were not killed by an immersion in a 1 to 1,000 sublimate solution for twenty minutes; they lived even after

twenty-four hours' immersion. The antiseptic property of a solution may be destroyed by the active agent being rendered inert by undergoing a chemical change; thus, sulphur (as in fæces) will combine with corrosive sublimate and from an insoluble and inert sulphide of mercury. La Place has also shown how albuminous compounds will combine with it and thus destroy its activity. It is also impossible to subject each individual bacterium to the action of the germicide. Bacteria often occur in masses or in extraneous matter, and it is only those on the surface that are reached and affected by the antiseptic. Oils and fats likewise interfere with their action. These facts, together with the dangerous action of antiseptics on the human organism, contrast markedly with the efficacy and innocuousness of disinfection as accomplished by moist and dry heat. Mechanical cleansing is at the basis of and should precede all attempts at sterilization.

Sterilizing dressings by means of steam.—Steam is now almost universally used for sterilizing dressings. In regard to the use of dressings impregnated with antiseptics, it should not be forgotten that dryness is a greater hindrance to the growth of germs than are antiseptics, and that it is better to use absorbent aseptic material than non-absorbent, antiseptically-prepared stuff that allows stagnation of the wound discharges. It is very doubtful whether material which has been through the many processes necessary for its antiseptic impregnation is as free from germs as is that sterilized by steam. The toxic action of the antiseptic also makes its use undesirable. In using a steam sterilizing apparatus it is better to have the steam enter at the top and escape below; it is quicker and more efficacious. Lautenschläger's apparatus is used by Von Bergmann. This is composed of an outer asbestos jacket and two inner copper cylinders, between which the water is held. When the lid is on, the steam ascends between the two inner cylinders and passes inside to the dressings from openings in the top; it escapes from an opening near the bottom. Heat is applied by a gas jet beneath the apparatus, and it goes up along the sides between the outer copper cylinder and the asbestos jacket to escape by holes at the top. The dressing is allowed to remain three-quarters of an hour, subjected to a heat of 100° C. In order to avoid handling and exposure, the dressings are placed in tin kettles or boxes, having openings at the top and bottom which can be closed by means of a slide. The openings are left uncovered and the apparatus and dressings placed in the sterilizer. When sterilized, the slides are shut and the box taken to the operating clinic for use.

Sterilization of metal instruments.—Immersion of instruments in antiseptic solutions, particularly the two per cent. carbolic, is not sufficient to thoroughly sterilize them. Thorough mechanical cleansing is the first thing to do. After use the instruments are rinsed in common water and laid in a hot soda and soap solution, and with a brush carefully scrubbed. They are then washed again and polished with so-called "*putzstein*" and alcohol and rubbed with chamois, and once more washed off with the soda solution and carefully dried. To sterilize them the use of dry heat requires too high a temperature and too long time. Boiling in soda solution is much better. The apparatus of Schimmelbusch, as made by Lautenschläger, is used. From a small box a spoonful (10 cu. cent.) of soda is taken and put in a litre of water for use in the sterilizer. Hanging with the box are a litre measure, hour-glass and match-safe. The instruments are allowed to boil from five to fifteen minutes, according to their size. The wire tray containing the instruments is then removed and placed in a pan containing a solution of one per cent. each of soda and carbolic acid.

Sterilization of brushes.—These are boiled for five minutes in the soda solution and kept ready for use, floating in sublimate solution, 1 to 2,000 (sublimate and acetic acid equal parts), with the bristles down in a small, enamelled, water-tight box, devised by Von Bergmann. In the operating-room the solution is changed two or three times daily.

Foreign Bodies in the Air Passages.

Sprengel (*British Medical Journal*, April 25, 1891) claims that the bronchus in which a foreign body is lodged can be determined by auscultation. If the air does not pass into one lung the corresponding bronchus is completely closed by the foreign body; if the obstruction is incomplete there will be a sibilant sound on inspiration at the seat of impaction,

while the respiratory sounds on the opposite side will remain normal. A case is given where a tubular bead gave rise to some error in localization on account of the occlusion not being complete. The absence of respiratory sounds on one side of the chest or a sharp, whistling sound heard over one bronchus cannot be regarded as absolutely diagnostic of the presence o a foreign body in a bronchus unless we know that such body is a solid and not a tubular one

Linear Craniotomy for Microcephalus.

Keen (*American Journal Medical Sciences*, June, 1891) prefers the name linear craniotomy to craniectomy for this operation. He continues the report of a case previously given in the *Medical News*, 1890, and adds two additional cases. The first case has improved steadily and considerably, but not at all to the extent of the case reported by Llanellongue. In case 2, aged 19 months, a strip of bone a quarter of an inch wide was removed, extending from within an inch of the supra-orbital ridge to an inch above and to the left of the inion. Its length was five inches. The progress was much the same as in the first case. Case 3 was a child, aged 16 months, with defective circulation. A groove, about a quarter of an inch wide, was cut three-fourths of an inch from the median line and extending from three-quarters of an inch above the supra-orbital ridge back nearly to the inion. Its length was six and three-eighths inches. The child died suddenly one and a quarter hours after the operation, presumably from heart failure.

Early Operation in Abscess of the Liver.

Demmler (*Le Progrès Médical*, May, 1891) advocates early operation in abscess of the liver as advised by Little, not waiting until the organ is partly destroyed or profoundly altered and the abscess begins to point externally. Exploratory punctures are strongly advised. Careful exploration by digital pressure should be made of each intercostal space and the thorax carefully viewed for any deviation from its normal surface. There are two kinds of hepatic abscesses: one, which is a degeneration of the organ, starting from some intestinal trouble, and the other, which is a primary inflammation of the gland, arising from various causes, disturbance of its functions, etc. In many cases dysentery has been lacking, the diarrhœa being due to the emptying into the intestine of bile altered by the products of hepatic inflammation. It is in these latter cases that Little's method is applicable, because the foci are generally isolated and the remainder of the organ is not too profoundly affected to be insusceptible of cure. Then follow detailed histories of five cases with one death.

Syphilitic Joint Affections.

Carl Rasch (*Archiv für Dermatologie und Syphilis*, 1891) discusses these affections and describes five cases and gives the *post-mortem* appearances in three of them. He names the affection chondro-arthritis syphilitica. It is called chondritis syphilitica by Virchow, and chronic hypertrophic syphilitic synovitis by Finger. The first case was of a man who died of pneumonia. The cartilaginous surface of both patellæ was covered with fine villi, from a millimetre to a centimetre in length. They were composed of a hyaline substance, with a greater or less number of cartilaginous cells. Behind the middle of the cartilaginous surface of the ext. condyle was a depressed radiated cicatrix, the size of a pea. The bone was not affected. Case 2 was a man, aged 34. All the joints between the first and second phalanges of both hands were affected, as well as both elbows. On *post-mortem*, villi were found and thickening of the joint capsule and small piles of cells; probably gummatous nodes. Case 3 had syphilis of the skin and left knee. The synovial membrane was thickened, injected and affected with proliferation of the villi. There was some erosion of the cartilage. Two additional cases are described affecting the ankle and knee joints, the former being cured by iodide of potassium. In the pure form of this disease there is no implication of the bones, although they may become affected, with syphilitic osteitis or osteomyelitis and thus complicate the case. The changes affecting the cartilage must be regarded as

a gummatous infiltration, the scars being the residue of the previous changes. Viewed externally, there is a diffuse, medium soft, capsular swelling that only slightly interferes with the motion of the joint. The subjective symptoms of the disease are slight, the patients rarely complaining of pain.

The Abortive Treatment of Buboes.

Welander (*Archiv für Dermatologie und Syphilis*, 1891) endeavored to eliminate a specific bacteria from chancroidal pus, but failed. The staphylococci and other cocci found were readily killed with mercurial lotions. Believing that buboes were caused by the transference of the staphylococci and streptococci, by means of the lymph channels to the glands from the chancroid, he endeavored to find a mercurial preparation which, when injected in concentrated form, would not cause intense pain or marked irritation. The material here used was benzoate of mercury, in one per cent. solution, with one-half per cent. of sodium chloride added. One or two injections of a half-gramme of this liquid were made into the gland. The skin was previously cleansed, also the syringe. A compress of sublimate solution was bound over the gland. Redness of the overlying skin was treated by pencilling with ichthyol solution, 1 : 2–3. The details of thirty-two cases are given. In twenty-seven of these fluctuation was either absent or doubtful. In eighteen hospital cases healing occurred without discharge of pus; in two some pus oozed out through the injection puncture. These cases were kept at rest. In nine private cases healing occurred without discharge, and three discharged pus. In eight cases, in which fluctuation was marked, all sooner or later discharged through the injection opening, none absorbed. Most of them pursued a relatively favorable course, and in only two cases was incision necessary. There are sixteen cases still under treatment. In summing up, seventy-three per cent. of the cases gave favorable results. It is to be hoped that a mercurial preparation will be found that causes less pain and infiltration than the benzoate of mercury; but as yet we know of none. Whether the theoretical grounds on which this treatment was founded are accepted or not, it cannot be denied that by this means buboes have been healed without the occurrence of those unsightly and lifelong-lasting scars, as has heretofore been the case.

Trephining for Jacksonian Epilepsy, with Remarks on the Implantation of Celluloid.

Hinterstoisser (*Wiener klinische Wochenschrift*, 1891) employed the method of A. Fränkel (*Wiener klinische Wochenschrift*, 1890, No. 25) in closing a trephining wound with a celluloid plate. An advantage in the use of these plates is that on account of their hardness and smooth surface, adhesions to the over- and underlying structures are less liable to occur. This makes them particularly applicable in cranial operations for traumatic neurosis, where these adhesions often play a conspicuous part. In using celluloid, it is to be carefully washed with soap and water, and allowed to lie twenty-four hours in a one per cent. sublimate solution. It is then to be preserved in a dry state. The use of alcohol, carbolic acid or warm water is to be avoided. Case: A man received a compound fracture of the skull, followed later by epilepsy. A year after the injury a trephine opening was made, four and a half c.m. long by three and a third broad, behind and to the inner side of the left parietal protuberance. Three days later a celluloid plate was firmly inserted and the skin united over it. A small strip of iodoform gauze was placed in the angle of the wound. The healing was prompt and satisfactory, and there was no return of the trouble.

The Compression of Nerves by Callus.

In the *Gazette Hebdomaire de Medicine et de Chirurgie*, March, 1891, is a clinical lecture on this subject, from the pen of the late celebrated surgeon, Trelat. Two cases are related in which an operation was done and the radial nerve liberated from callus. There was restoration of function. In these cases the paralytic symptoms appear in one, two or

three months, and increase progressively. Motor paralysis is accompanied by atrophy, and there is alteration in the sensibility of the part. Sometimes, but not always, trophic changes occur. Operation is the only method of cure. These cases are not frequent, as Trelat has only seen four in all his career; there are, however, many reported. One finds one of two conditions—either the nerve is lifted up and stretched over the end of a displaced fragment or exuberant callus, or is ensheathed by the callus. This tunnel is usually fibro-osseous. In some places, as in the neighborhood of the brachial plexus, ensheathment of the nerve is impossible. A third case occurred in a fracture of the fibula, in which the anterior tibial nerve was compressed. When the nerve is stretched over a projecting part it is apt to be flattened out, but when ensheathed it is somewhat reduced in size, cylindrical, and with a bulbous enlargement just above the callus. It is also rough and inflamed. As the degeneration is progressive, operation should not be delayed. Restoration of function is quicker in the young than old. Some nerves, the radial for example, are not so apt to give rise to sensory troubles as do others. The late onset of the paralysis, and its progressive increase as the callus hardens and contracts, are valuable diagnostic signs. In one case improvement did not commence until three months after the operation. In operating, the nerve should be searched for above or below the seat of injury, and followed up to the involved part.

The Treatment of Wounds, with Especial Reference to the Value of the Blood-Clot in the Management of Dead Spaces.

Halstead (*Maryland Medical Journal*, April 18, 1891) discusses the treatment of wounds, with especial reference to the value of the blood-clot in the management of dead spaces. The presence of blood in a wound was regarded by Küster, Von Bergmann, Lister and others as a thing to be avoided, inasmuch as it tended to encourage septic processes. Kocher and Neuber attempted to keep the wound as free as possible of blood by obliterating all dead spaces. Schede, in his article on the healing of wounds under a moist blood-clot, made the greatest contribution to the technique of surgery since the introduction of antiseptic methods by Lister. The author, instead of attempting to absolutely obliterate all dead spaces, now advocates the use of the blood-clot for this purpose.

The Operative Treatment of Renal Tuberculosis.

Madelung (*Langenbeck's Archiv*, Bd. 41) has an elaborate article on this subject with the histories of five cases. Diagnosis is difficult. The finding of tubercle bacilli in the urine is of value, but they may be absent even in advanced cases. The inoculation of animals with the suspected urine for diagnostic purposes is of little use. It is difficult to determine the condition of the vesical mucous membrane; subjective symptoms, as dysuria and strangury, are not necessarily indicative of vesical disease. Cystoscopic examinations, owing to the presence of pus, blood, etc., have not been satisfactory enough to enable one to recognize that the trouble is tubercular. It is desirable to know whether only one kidney is affected or both. The increase of size and the presence of pain on one side may aid in determining this, although even laparotomy and digital exploration may not positively determine it. Catheterization of the ureters, even in women, is not of much service. Paralysis of the sphincter in the latter is very apt to follow overdistention. Attempts were made in two cases to catheterize the ureters after suprapubic section, but while fine sounds could be introduced, the catheters could not. Even after a nephrotomy it is sometimes impossible to say whether the other kidney is healthy or not. If pus is still found in the urine, it may be that the operator did not open the pelvis of the affected kidney, but only a pus sac; also it may come from the ureter of the diseased side or some affection of the bladder itself. The only certain way is to expose the kidneys and carefully ascertain their true condition. Inasmuch as healing may occur spontaneously, the author has only operated when fever or other marked symptom forced him to use the knife. He has had, in the last few years, over a dozen cases of renal tuberculosis, but has only operated in four. In two others, operation

was refused. The coexistence of tuberculosis in another organ need not prevent our operating unless the disease has advanced too far, or, more particularly, if there is a marked cystitis present. Total extirpation is the only advisable method of procedure; it has already been shown that nephrotomy is not always sufficient for even diagnostic purposes; healing does not occur, and death may follow. The operation should always be extra-peritoneal and the oblique lateral incision is preferred. The ureter may be cut short and closed with catgut instead of being fixed externally as advised by Israel. The operation is one certainly to be advised when other means of treatment have been exhausted, as even if it does not entirely cure the patient his symptoms are alleviated and his life made more comfortable.

Resection of the Spine for Spondylitic Paralysis.

Kraske (*Langenbeck's Archiv*, Bd. 41, S. 831) discusses this subject at length. He had occasion to perform this operation several times, but the results were not so successful as one would be led to expect from Macewen's article. Paralysis from pressure is the kind most apt to be benefited by operation, but is usually better treated by extension. In tuberculous disease, abscesses and granulation tissue may form around the cord, constituting a pachymeningitis. The exudate may compress the cord and make it anæmic. Interference with the lymph and blood streams also occurs and may cause œdema. Circulatory disturbances can exist for a long time without causing an irreparable paralysis. When, as is rarely the case, the disease affects the arches instead of the bodies of the vertebræ, operation is indicated and will probably be followed by good results. The improvement which sometimes occurs in these cases without operation has been, in his experience, only temporary. This has made him more willing to resort to operative procedures. The first case operated on had disease of the arches. The results were brilliant. Sensation began to return the same day and in two days was normal. On the fourth day motion began returning, and in four weeks the patient began to walk. Two months later the paralysis returned, and the patient died of tuberculosis of the lungs seven months after. In a second case an exudate into the canal was found, but no good results came from the operation, and the patient died eight weeks later. In two other cases granulation masses were found overlying the dura; in one of these recovery was almost complete in two months; he then relapsed and is now dying of tuberculosis of the lungs. The results in the other case were not so rapid, but were marked for a while and then remained stationary. Operation may be advised also in those cases of kyphosis in which treatment has proved useless, and in which the onset of the paralysis was rapid and involved the bladder and rectum. These cases lead to a rapid death anyway, and if allowed to remain long, the paralysis is irreparable.

Galvano Treatment of Enlarged Prostate.

Morotti (*British Medical Journal*, May, 1891) describes the method of Bottini in the treatment of enlarged prostate. The "incisor" apparatus is constructed like a small lithotrite in which the male blade has been substituted by a platinum wire loop. The female blade is hollow to allow the passage of two streams of water, by means of which the apparatus is cooled off. An accumulator battery is used with the instrument. Chloroform is only occasionally required. Unless the bladder is quite empty no water need be injected. The instrument is introduced into the bladder, its beak reversed so as to press against the enlarged prostate and the current turned on. When the sound of burning is distinctly heard the point should be gently moved backward and forward until the lobe is divided. Contact for one minute made a scar one centimetre thick, and for two minutes double the size. The instrument should be allowed to remain *in situ* for two or three minutes, so as to allow it to become cool before it is withdrawn. After the operation Nelaton's catheter may be used. Bottini has operated on fifty-seven cases with two deaths. In thirty-two cases a perfect cure was effected, in eleven there was improvement, and in twelve the results were nil. Operation is contraindicated when kidney disease is present or even suspected.

Intra-peritoneal Myo-fibroma of the Rectum, Weighing Twelve Pounds, Successfully Removed by Laparotomy.

Illustrating the difficulty in making a diagnosis of solid intra-pelvic tumors, and indicating the impossibility, with the means of diagnosis at present available, of differentiating between intra-peritoneal myo-fibroma of the rectum projecting into the peritoneal cavity, and solid tumors of the ovary, broad ligament, and pedunculated myo-fibroma of the uterus, Senn reports (*Weekly Medical Review*, March 21, 1891) an interesting case described by the above title. The patient was found to have a pelvic tumor the size of a walnut some three years prior to the time of operation. For two years it remained stationary, and caused no inconvenience, but at the end of that time it began to enlarge, and caused some pelvic distress, and six months later the general health began to be impaired. The abdomen became distended with fluid, and œdema of the hips and lower extremities followed. Upon opening the abdomen a solid tumor was discovered, attached to the deepest part of the pelvis near the middle line. It was removed by tying its contracted base in three sections, transfixing the upper and lower portions, and tying the central one after they had been cut. Immediately on the removal of the tumor, a small quantity of fluid fæces escaped into the pelvis, showing that the rectum had been opened. After careful cleansing, this rent was closed with great difficulty by Lembert sutures. A large Keith's glass drain, surrounded by several layers of iodoform gauze, was inserted so as to be in contact with the rectal wound. On the third day a small amount of fæces escaped from the drain. Six days after the operation the glass tube was removed, and the drainage maintained by strips of iodoform gauze. Two weeks later the fæcal fistula had closed, and the drainage opening healed soon afterward by granulation. Senn considers the case an exceedingly rare one, and thinks that if, on opening the abdominal cavity in a similar instance, the true nature of the tumor could be decided, it would be better to effect removal by enucleation, rather than by ligaturing the base before removal.

Supra-acromial Dislocation of the Clavicle.

Poirier and Rieffel (*British Medical Journal*, April 18, 1891, from *Archives Générales de Médecine*, April, 1891) have concluded from experiments upon the cadaver that this dislocation results from violence acting obliquely from before backward, or in the opposite direction, on the region of the deltoid muscle. They believe that in incomplete dislocation the acromio-clavicular ligaments in all cases, and the trapezoid ligaments sometimes, are torn through, and that when complete separation of the bones occurs, rupture of the conoid ligament is inevitable. The luxation, as a rule, remains imperfectly reduced, and some deformity always results. In many cases this causes no serious impairment of motion, but sometimes the patient is incapacitated for work on account of pain and difficulty in moving the shoulder, and of impossibility to raise the arm beyond a right angle. The writers recommend in the treatment of recent dislocations of this joint exposure of the seat of injury by operation, and the fixation of the separated bones in their proper relations by means of wires. They record two successful cases.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D.,

ASSISTED BY

DAVID CERNA, M.D., PH.D., AND THOMPSON S. WESTCOTT, M.D.

The Odoriferous Principle of Asparagus in the Urine.

The peculiar characteristic odor of the urine of persons who have eaten asparagus is attributed by NENCKI (*Archiv für Experimental Pathologie und Pharmacie*, XXVIII, No. 3) to the presence of methyl-mercaptan, a substance produced in the fermentation of albumin and gelatine, and forming one of the constituent gases of the intestine. The presence of this substance in the urine of asparagus-eaters is explained by the fact that asparagus contains an organic sulphur compound which is supposed to undergo disintegration with the production of methyl-mercaptan during the germination of the plant.

Physiological Action of Cactina.

Of the actions of this drug, the proximate principle of *cereus grandiflora*, the night-blooming cereus, O. M. MYERS (*New York Medical Journal*, June 13, 1891) makes the following resumé: In therapeutic doses cactina (1) increases the musculo-motor energy of the heart, probably through its influence upon the intra-cardiac motor and accelerator ganglia, in consequence of which the cardiac impulses become regular and much stronger; (2) elevates arterial tension, increasing correspondingly the height and force of the pulse wave by (*a*) increased cardiac action, and (*b*) by stimulation of the vasomotor centre; (3) influences the nervous system by its direct action upon the motor centres of the spinal cord, thus increasing the reflexes and elevating the general nervous tone. Cactina is, therefore, a powerful cardiac tonic stimulant. Its value has been shown in all varieties of functional cardiac and circulatory disturbances and in organic heart disease, excepting mitral stenosis, where digitalis is preferable. In aortic insufficiency, the short diastole produced by cactina is especially valuable in combating regurgitation.

Antipyrin in the Treatment of Pleural Effusions.

At a recent meeting of the Société Nationale de Médicine of Lyons, CLÉMENT (*Lyon Médical*, May 10, 1891) commended the value of antipyrin in the treatment of acute and chronic pleural effusions. The drug, to be effective, must be given in doses of about fifteen grains every four hours, and continued in somewhat smaller doses for several days after the disappearance of the effusion, a result which he states may be expected in from one to four days. Purulent or bloody effusions are not favorably affected, and when the pleural cavity is completely filled, Clement prefers immediate resort to paracentesis. He is at a loss to explain this singular effect of the drug upon any other ground than its specific action upon inflammatory processes, the kidneys or skin never having shown sufficient overactivity to account for the rapid subsidence of the effusion.

Naphthaline as a New Tape-worm Remedy.

According to the observations of MIROVITCH (*Mercredi Médical*, May 2, 1891), naphthaline is a powerful tæniacide, being superior to other anthelmintics both in the certainty of its action and in the absence of any toxic effect. For children, the author employs the following formula:

℞. Naphthaline . . . . . 4½ to 7 grains.
Castor oil . . . . . ½ ounce.
Essence of bergamot . . . . . 2 drops.

To adults, fasting, fifteen grains of naphthaline are given, followed immediately by an ounce of castor oil. For two days preceding the administration of the drug, the diet should be well salted, acidified and highly spiced. In all the cases observed by Mirovitch, a single dose of naphthaline has sufficed to bring away the tænia complete, even in cases in which other remedies have failed.

The Treatment of Gastric Ulcer.

In a clinical lecture upon the nature and treatment of gastric ulcer, Dujardin-Beaumetz (*Journal d'Hygiene*, June 4, 1891) teaches that this lesion is due, in the first place, to an infectious cause which enfeebles the vitality of the wall of the stomach, and, in the second place, to a condition of hyperacidity of the gastric juice, which produces an ulceration in some weakened spot of the mucous membrane. The indications for treatment are to nourish the patient and to quiet pain. The first is fulfilled most perfectly by an exclusive milk diet, which, in rebellious subjects, may be modified by the addition of semi-liquid food, such as racahout, farina, chocolate and vegetable purées. The hyperacidity of the gastric juice may be diminished by the administration of thirty to forty-five grains of bicarbonate of sodium three hours after meals. For the pain morphine and atropine should be given hypodermatically. Another remedy which often gives satisfactory results in this indication is condurango; the powdered leaves should be given in dose of fifteen grains at the meal.

Therapeutic Properties of Lysol.

Michelsen (*Centralblatt für Gynäkologie*, No. 1, 1891) has made a careful trial of lysol, a coal tar product obtained from kresole, a higher homologue of carbolic acid. This new antiseptic is readily soluble in water, and is said to be superior to carbolic acid and creolin as a germicide. The aqueous solution has a soapy feel, and in gynecological practice renders the use of a lubricant unnecessary. This same quality, however, is often an inconvenience, as instruments and ligatures subjected to the action of an efficient solution (5 per cent.) become slippery and difficult to handle.

The Elimination of Antipyrin.

The rapidity of elimination of antipyrin has been experimentally worked out by Perret and Givre (*Lyon Médical*, June 7, 1891). The marked tolerance of this drug by young children, and their almost complete exemption from the not infrequent accidents observed after its use by adults, have suggested the idea that elimination of this substance in children is much more rapid than in older patients. The presence of antipyrin in the urine can be detected by the addition of perchloride of iron, which forms a beautiful deep-red color. This test is sufficiently delicate to show the presence of one part of the drug in 5,000 parts of urine. The results of this investigation show that (1) the elimination of antipyrin, in all doses, in both children and adults, commences at the same time—about three-quarters to one hour after ingestion; (2) the child eliminates the same dose more rapidly than does the adult, and he, in turn, more rapidly than the old man. Seven and a half grains given to a child continue to appear in the urine for fifteen to twenty hours, while the same quantity in the adult requires twenty-four to thirty hours for elimination, and a somewhat longer time in an aged person. Larger doses considerably prolong the period of elimination. Sixty grains, in a single dose, administered to an adult, continued to appear in the urine for seventy-two hours.

An Exanthem Produced by Rhubarb.

Litten (*New Orleans Medical and Surgical Journal*, May, 1891, and *Therapeutische Monatshefte*, December, 1890) records a case of severe skin eruption in a healthy man of

45 years, who had taken a purgative draught containing three fluid ounces of infusion of rhubarb root. Rigors and pains in the limbs occurred shortly after the ingestion of the drug; within twelve hours the face, lips and tongue began to swell, and at the end of twenty-four hours, a well-marked hemorrhagic and pustular eruption covered the entire body. The hemorrhages were distributed over the trunk and members, and varied from the size of a bean to that of a small plate. The pustules, which were also plentifully scattered, resembled the lesions of pemphigus. In some places the individual pustules had become confluent and covered large areas. Removal of the scabs left shallow, dirty-looking ulcers. The lymphatic glands were swollen and painful. Similar lesions were present on the mucous surfaces of the nose, lips, mouth and throat, and upon the conjunctivæ. Blood was frequently passed from the urethra. The temperature reached 103.3° F., but the patient felt strong and well. He attributed the eruption to the rhubarb, because of similar experiences after its use. A subsequent experimental administration of the drug confirmed the diagnosis, but chrysophanic acid gave negative results.

Idiosyncrasy to rhubarb is very rare, only one other case, as far as known, having been reported by Goldenberg (*New York Medical Journal*, December, 1889).

Tranjen's Cure for Pulmonary Tuberculosis.

Bulgaria furnishes us with a new cure for tuberculosis of the lung. Tranjen (*Berliner klinische Wochenschrift*, April 20, 1891) has had some success from the hypodermatic injection of a solution of thymolo-acetate of mercury in liquid paraffine, in the proportion of three parts to forty. A Pravaz-syringeful of this solution is injected into the gluteal muscles at intervals of seven to ten days. After two or three injections, one and one-half grains of potassium iodide are administered three times daily till seventy-five grains are taken, when the injections may be begun again. The results of this method are said to be encouraging and worthy of further experiment.

Is Salol ever Dangerous?

Hesselbach (*Deutsche Medizinal-Zeitung*, May 18, 1891, and *Fortschritte der Medicine*, 12 and 13, 1890) records a fatal case of salol poisoning, where the patient, a man suffering from acute rheumatism, with old cardiac disease and interstitial nephritis, had taken, by mistake, two drachms of the drug within eight hours, and died two days later from acute nephritis. This untoward result prompted an experimental inquiry as to which of the elements of the drug—phenol or salicylic acid—was responsible for the acute renal inflammation. He concludes that the toxic action of salol is dependent upon its phenol, and that a diseased condition of the kidney, which favors a prolonged contact of its elements with forming sulpho-carbolic acid, is a decided contraindication to the use of the drug.

On the other hand, Sahli (*loc. cit.*) points out that in Hesselbach's experiments the dose of salol necessary to kill a rabbit corresponded to more than sixteen ounces for an average man, while the fatal dose of phenol corresponded to a little more than two drachms. He further reaffirms that salol in greatest part is eliminated unchanged, while only a very slow disintegration takes place in the intestinal canal. This property of all the salol group, he believes, will establish their use as antiseptics in such mycotic diseases of the intestine as cholera and typhoid fever.

Salipyrin.

Of this new drug, which is, chemically considered, a salicylate of antipyrin, Paul Guttmann (*Deutsche Medizinal-Zeitung*, May 18, 1891, and *Berliner klinische Wochenschrift*, 37, 1890) has made an extended trial. He found that ninety grains, given in divided doses of fifteen grains every hour, the first dose being double, produce in cases of pyrexia a fall of temperature of from 2½° to 3½° F. after three or four hours, which is followed by a gradual rise, lasting four or five hours, nearly to the original height. The fall is accompanied by a not unpleasant perspiration and a reduction of the pulse frequency. In acute and chronic

rheumatism and sciatica, in the dose of fifteen grains every two hours to ninety grains having been taken in the twenty-four hours, this remedy is said to act satisfactorily. No unpleasant symptoms, it is said, have followed the use of this daily dose for a period of fourteen days or longer, one patient having taken in this way as much as three ounces. One case of exanthem, resembling that produced by antipyrin, was observed.

The Therapeutics of Intravenous Injections.

Mayet (*Lyon Médical*, May 10, 17, 24, and June 7, 1891) has studied this subject most exhaustively. Intravenous injections may be employed in human medicine with one of three indications in view: (1) To restore the deficiency in the quantity of liquid circulating in the vessels after a considerable loss either of blood with all its elements, or of a notable proportion of its serum; (2) to favor the elimination of certain toxic principles by making a great quantity of liquid pass through the circulation and thence through the kidneys the "antitoxic lavage of the organism"; (3) to introduce into the circulation, and consequently into the system, certain medicinal substances, in order to render their action more prompt and assured.

(1) In cholera the observations of Dujardin-Beaumetz, Veathrill, Latta, Craigie, Gerwood and Adair-Lauric demonstrate the undoubted value of this procedure. The author believes that much larger quantities should be injected than have been hitherto used. While Hayem regarded two or three injections daily as the maximum, Mayet advises five or six or even more. The quantity of liquid at each time should not exceed 300 cubic centimetres. As a succedaneum to, or even a substitute for, transfusion of blood after exhausting hemorrhages, the author believes intravenous injection justifiable. The choice of liquid and its mode of employment receive careful consideration. The action of pure water upon blood is well known; it dissolves out the hæmoglobin, swells the stroma and destroys the elasticity of the corpuscles. This result undoubtedly is less marked within the living bloodvessels; but the deleterious effect of free hæmoglobin in the blood renders the injection of pure water unadvisable. The alkaline salts, chloride of sodium, bicarbonate of soda, sulphate of soda, neutral phosphate of soda, and sulphate of magnesium, all possess the power of preserving to a great degree the form and properties of the corpuscles, and in sufficiently attenuated solution may be used to fulfil this purpose. Of these the chloride of sodium is the least noxious, and in the proportion of .5 or .6 per cent. is the salt to be chosen. The injection should be made slowly, and, when the median basilic vein is chosen, should not exceed the rate of 50 c.c. per minute for six minutes, to give the maximum safe quantity of 300 c.c.

(2) The use of this method is of undoubted service in acute poisoning, especially by such agents as sulphuric acid, oxalic acid, chlorate and nitrate of potash, certain arsenical compounds, especially arsenetted hydrogen, salts of lead and mercury, and, to less degree, the alkaloids and digitalis. The author suggests the possibility of its employment as an eliminating agent in diseases in which the chief danger lies in the ptomaines and toxalbumins elaborated by the microbe or the virus of the disease.

(3) While admitting that the subcutaneous method is most generally applicable for the administration of drugs whose rapid action is desired, the author has encountered cases in which intravenous injection has proved of vital benefit. Such are cases of pernicious malaria, in which the bromhydrate or lactate of quinine may be employed; poisoning, in which a rapid action of apomorphia is desired and its administration by the mouth is impracticable; and, finally, cases in which prompt action of chloral is demanded. These last include rabies, tetanus, delirious or convulsive uræmia, puerperal eclampsia, severe delirium tremens, strychnia poisoning, and certain exceptional cases of disease where subcutaneous use of morphia has proved unavailing.

Seven to fifteen grains of lactate of quinine to five fluid drachms, or fifteen grains of chloral to an ounce of distilled water may be taken as the usual dose for injection. The dose of apomorphia, which should not be larger than one-sixtieth to one-thirtieth grain, may be given by the ordinary hypodermic syringe of 1 c.c. capacity, while the other solutions

need a glass syringe large enough to contain the full quantity of the injection. In all cases the liquid must have a temperature of 98.6° F., and be carefully sterilized by boiling. The veins of the bend of the elbow or of the forearm are generally to be selected. It is useless and even dangerous to denude the vein. The arm is first bandaged above, as for bleeding, and the needle, which must be quite fine, is introduced for about a centimetre, almost parallel with the course of the vessel, care being taken not to pierce the vessel from side to side. A small drop of venous blood will flow from the free end of the needle, and not till then should the syringe, from which all air bubbles have been driven, be attached. The bandage is now removed and the injection steadily and very slowly made.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M D., AND W. REYNOLDS WILSON, M.D.

Two Cases of Rupture of the Uterus: Recovery without Operation.

Carl reports in the *Deutsche medinische Wochenschrift*, No. 10, 1891, a ruptured uterus in a VI.-para, who had borne the five children previously without artificial assistance, but who had a contracted pelvis. The child escaped entirely into the abdominal cavity and was extracted through the rent by version without much difficulty except when the head was pulled through. A large drainage tube was placed in the tear without any attempt at irrigation. Although the woman had high fever for a time and signs of beginning peritonitis, she ultimately made a good recovery.

In the *Centralblatt für Gynäkologie*, No. 24, 1891, is an abstract of an article by Guéniot describing a rupture of the uterus during labor, with partial extension of the child into the abdominal cavity. The chief midwife of the hospital turned and extracted the infant immediately. After considering abdominal section, Guéniot concluded to treat the case expectantly. Stimulants were administered, ice was applied to the abdomen, and antiseptic vaginal douches were employed. With the exception of a very slight rise of temperature the woman made an uncomplicated recovery.

Foreign Body in a Pregnant Uterus.

Bunge (abstract in *Centralblatt für Gynäkologie*, No. 26, 1891) reports the case of a woman who inserted a hairpin in the uterus to bring on abortion and was then unable to extract it. In the following night she aborted and had no further trouble for twelve days, when she began to complain of some pain in the hypogastrium, with painful micturition and a slight discharge of blood. An examination showed the foreign body at the internal os. It was easily grasped and removed, whereupon the symptoms subsided.

Ovarian Pregnancy.

At the fourth meeting of the German Gynecological Society, May, 1891, Eberhart presented a specimen of ovarian pregnancy. Abdominal section was made at the beginning of the fourth month for ectopic gestation. The tumor was about the size of a hen's egg and was ovarian. The tube in its entire length could easily be distinguished. The interior of the tumor contained a purulent fluid, but under the microscope chorion villi could be plainly demonstrated. There had evidently been early death and disintegration of the embryo, with suppuration of the sac.

Morphia in Pregnant, Parturient and Nursing Women.

Fürst (*Archives de Obstetrique et de Gynecologie*, March, 1891) gives the results of his studies to determine the effect upon the fœtus when morphia has been administered to the mother. In one case 1,200 hypodermic injections of a three per cent. solution of morphia had been taken during pregnancy, and in a later gestation 800 injections of the same strength. Before labor the fœtus was quiet after the drug was given to the mother until its effect began to wear off, when fœtal movements were very active. After birth the children manifested no signs of physical or intellectual ill-development. Fürst concludes from this and other observations that morphia does not endanger fœtal life to so great an extent as has been thought. Used moderately it is not a dangerous drug for pregnant women. Its usefulness in threatened abortion and miscarriage is well known. During labor, particularly when prolonged, its use is more dangerous. He notes the rapid passage of the drug into the milk when given to nursing mothers.

Treatment of Syphilis During Pregnancy.

Besnier (*Gazette de Gynecologie*, June 15, 1891) recommends the following routine treatment:

(1) *Tonic Medication.*—Nutritious food, syrup of the iodide of iron, preparations of quinine.

(2) *Specific Medication.*—Every day administer the following pill:

℞ Hydrarg. chloridi corrosiv. . . . . $\frac{1}{6}$ grain.
Ext. opii,
Ext. gentian., ... āā $\frac{1}{12}$ grain.
Glycerini, ... q. s. M.

Sig.—Ft. pil. No. 1.

(3) At the same time prescribe the iodide of potassium in doses of eight to fifteen grains.

Continue this treatment throughout the pregnancy. Increase in weight of the patient is the measure of its efficacy.

The Treatment of Shock in Ectopic Gestation.

C. A. L. Reed (*New York Medical Journal*, June 6, 1891), in an article on the surgical treatment of ectopic gestation, brings up the question of the relation of so-called shock in cases of rupture of the sac to intra-pelvic hemorrhage. Shock from concussion, in cases of accident, occurs as the result of nervous depression, independent of the loss of blood. Shock, as the result of internal hemorrhage in ectopic gestation depends, not upon reflex nervous influences incident to the damage to tissue, but upon the sudden lowering of arterial tension from loss of blood.

He supports this proposition by calling attention to the fact that compression of the nervous filaments by ligation in ordinary extirpation of the appendages is entirely free from shock. To the presence in the peritoneal cavity of blood, "a bland and saline fluid with a temperature of 99° F.," he attributes no significance as an element in the causation of shock.

Inasmuch as the hemorrhage is the main pathological factor, the writer urges the propriety of surgical treatment. After reviewing the opinions of various operators as to the frequency of intraligamentous hemorrhage with resorption, he concludes that every case should be treated, if in the early months, irrespective of this consideration, and if rupture has already occurred, with the expectation of finding the effusion within the peritoneal cavity.

Extra-uterine Pregnancy Occurring Twice in the Same Patient.

Henry T. Byford (*North American Practitioner*, June, 1891) reports the removal of the fœtus in a case of tubal pregnancy in which an extra-uterine pregnancy occurring on

the opposite side had been diagnosticated ten years before. In the first instance, a small hematoma of the right ligament had been detected, traces of which had remained after several months. At the time of the operation, the sac, which had ruptured into the left broad ligament, was opened and drained. There was nothing extraordinary either in the diagnosis or in the operation, although the writer calls attention to certain points worthy of special mention, namely, the blackness of the uterine discharge, the ligation of the broad ligament in the course of the operation, to prevent hemorrhage, and the rupture into the broad ligament demonstrated by the displacement downward of the uterine artery and the connective tissues' fibres.

Unfortunately, there is no allusion to the condition of the right tube at the time of the operation in order to confirm the former diagnosis of tubal pregnancy. In reference to operation in cases of ectopic gestation, C. A. L. Reed advises the removal of both tubes in order to prevent the detention of the ovum in the unaffected tube at some future time, since he believes that desquamative salpingitis is the cause of tubal gestation, and that this form of tubal inflammation is uniformly bilateral.

Tubo-uterine Pregnancy.

Jewett (*American Journal of Obstetrics*, July 1, 1891) reports an interesting case of interstitial pregnancy. The patient was 28 years old, and had borne a child seven years before. She had all the symptoms of early pregnancy from the middle of November until the 10th of January, when there were sacral pains and a bloody flow from the vagina. At the end of March there was a severe paroxysm of pain without shock. A few days later there was a second paroxysm, with profound collapse. The abdomen was then opened, as a last resort. The cavity contained blood, serum and a four-and-a-half-months' fœtus, attached by its cord to the gestation sac, which lay in the right uterine cornu. The sac had ruptured at a point just behind the insertion of the right tube, the rent extending upward about one or two inches. The abdominal cavity was flushed and an attempt made to sew up the uterine tear. As the operation was about completed the patient died. Dr. Jewett refers to the rarity of this kind of ectopic gestation. Tait has seen but a single case, and that a *post-mortem* specimen. Jewett had seen one other specimen, also *post-mortem*.

Cæsarean Section for Eclampsia.

In a discussion on the treatment of eclampsia at the last meeting of the German Gynecological Society, much attention was devoted to the propriety of performing Cæsarean section in gravid or parturient patients. Kaltenbach reported a case; Gusserow declared that the operation was justifiable, without a doubt, in some cases.

Chrobak said that definite indications for the operation could not yet be formulated.

Müller reported an operation which he had done, with a fatal result. The woman had chronic nephritis, with a fresh outbreak. In his opinion, Cæsarean section will be justified when the rapid termination of labor is impossible in any other way, and when, by statistical study, we know more than we do at present in regard to the influence upon the disease exerted by the termination of labor.

Löhlein, in closing the discussion, declared that in spite of the improved prognosis of Cæsarean section, it could very rarely be indicated in eclampsia. He had never, in a large experience, seen a case in which the operation was justifiable; least of all, in the last two cases reported, for the women died, not *inter partum*, but after being delivered of living children.

A Lithopædion in the Rudimentary Horn of a Uterus Bicornis, and Normal Pregnancy in the Other Horn.

Elbing reports (*Deutsche Medizinal-Zeitung*, No. 48, 1891) the case of a 34-year-old peasant who conceived twice and was delivered easily of an infant, at term, from a

well-developed horn (the right) of a uterus bicornis, while in the rudimentary horn to the left a lithopædion had been carried more than a year and a half without apparent disadvantage to the woman. As the left horn of the uterus did not communicate with the cervix, and had no external opening at all, there must have been an internal transmigration, either of the spermatic particles or of an impregnated ovule, from the right to the left side of the pelvis.

GYNECOLOGY.

UNDER THE CHARGE OF

WILLIAM GOODELL, M.D.,

ASSISTED BY

J. M. BALDY, M.D.

The Relation of Displacements of the Abdominal Viscera to Pelvic Disease.

J. H. Kellogg (*Nashville Journal of Medicine and Surgery*, June, 1891). The purpose of this paper is to show: (1) That the average adult civilized woman of modern times is deformed, her waist measurements being much too small for the rest of her body. (2) That this deformity, and others growing out of it, are the results of an unnatural and unhealthy mode of dress, and neglect of physical or muscular activity. (3) That the deformity of figure which the average woman presents is indicative of changes in the static relation of the abdominal and pelvic viscera, which are the source of many and serious morbid conditions and painful symptoms. (4) That in a majority of cases of pelvic diseases in women, especially cases of displacement of the pelvic viscera, the pelvic disease is not an isolated or independent malady, but only a partial or local expression of a more general disease which involves also the abdominal viscera in whole or in part. (5) That in consequence of constriction of the waist, and weakening of the lower muscles of respiration, the civilized woman has acquired an unnatural mode of breathing, which tends strongly in the direction of the development of disease of the abdominal and pelvic viscera. (6) That any therapeutic method addressed to the cure of maladies of this class, to be successful, must include such measures as will correct the disturbed static relations of the abdominal viscera as well as the displaced uterus and ovaries, and will remove the causes of these displacements by restoring their natural supports.

The Electrical Treatment of Fibroid Tumors.

G. Betton Massey (*Medical and Surgical Reporter*, June 6, 1891). As an illustration of the results of electrical treatment of these growths, Massey has analyzed the histories of forty-six cases treated consecutively by himself, in which he had considered the conditions present at the beginning of treatment, the nature of the treatment, and the results as ascertained at various periods after the cessation of treatment. A study of these cases will show that seven cases should be eliminated from consideration in this paper, because two were polypoid and their delivery per vaginam was merely assisted by the electrical applications made, and five were treated for so short a time, or were so soon lost sight of, that it is impossible to use them in demonstration. This leaves thirty-nine cases that had more or less thorough treatment, and in which the results have been ascertainable. These are divisible into five classes in the matter of results attained:

Class I. Cases of complete anatomical and symptomatic cure, the tumors disappearing and the patient being restored to health. Of this class there were five cases.

Class II. Cases in which the tumor was considerably diminished in size and all other symptoms were cured. Of this class there were twenty-three.

Class III. Cases in which the tumor was not diminished in size, but all the symptoms were relieved; or in which the tumor was reduced, but the symptoms were not relieved. Of this class there were eight.

Class IV. Cases in which the tumors were neither diminished nor the symptoms relieved. Of this class there were two.

Class V. Cases made worse by the treatment. Of this class there was but one.

The Treatment of Chronic Ovaritis.

A. J. C. Skene (*Medical News*, June 13, 1891). Many of the cases treated by abdominal section are not much, if at all, improved. The cases cured are those operated on when near the menopause; those improved are generally such as have suffered from complicating affections; for example, dysmenorrhœa; while the unimproved are the younger subjects in whom the disease was uncomplicated. The indications for treatment are both general and local. The indications for general treatment are to lessen the blood supply and relieve pain by correcting the deranged innervation. This, in the early stage, demands rest in the recumbent position. At the same time general exercise should be advised, either by massage or by gymnastics in the reclining position. The condition of the digestive organs should be carefully watched and relieved by small doses of mercury and a laxative. The saline laxatives are the best. To relieve pain and lessen the hyperæmia the bromide of sodium and fluid extract of hydrastis canadensis are by far the most potential agents; they are given in combination—twenty to thirty grains of the bromide and ten to twenty minims of the hydrastis, three times a day, until the physiological effects of the bromide are noticed in a mild degree.

Sometimes the bromide fails, even in larger doses, to relieve the menstrual pain. In this case ten grains of salicylate of sodium and five of antipyrin, given between meals, answer for some time; others, more especially those markedly debilitated, do better on full doses of aromatic spirits of ammonia, camphor and chloric ether, with small doses of cannabis indica. In the unmarried, local treatment should be avoided. Hot sitz-baths, counter-irritation and hot vaginal douches comprise about all that should be employed in young women. In married women any complicating disease should be treated locally. In addition, applications which will relieve the tender and hyperæmic ovaries are applicable. A small tampon, saturated with equal parts of tincture of belladonna and glycerine, applied behind the cervix and permitted to remain forty-eight hours, is useful, and after its removal a hot douche. These are continued for five days, and are followed by an application of tincture of iodine to the vaginal vault. Good effect has been obtained from the sulph-ichthyolate of ammonium, five parts in ninety-five of glycerine, applied in the same way as the belladonna and glycerine. The general and local treatment thus briefly outlined gives relief to the more pronounced symptoms. The pain becomes less and also the tenderness. The general health improves and the pelvic congestion subsides. From this point tonics and laxatives may still be required, but alteratives are also indicated. Iodine and mercury are the chief agents. Small doses of bichloride of mercury, with chloride of iron, when iron is indicated, followed by syrup of the iodide of iron, in doses as large as can be borne, may be administered. These can only be used when the bromides are given up. In place of the bromides, sulphonal is of great value to promote sleep. The treatment is necessarily a long-continued one and requires patience and careful watching.

The Relations of Endometritis to Salpingitis and Pelvic Peritonitis.

C. N. Smith (*Journal of Gynæcology*, May, 1891) comes to the following conclusions concerning the relation of endometritis to salpingitis: (1) Non-specific endometritis, even in a mild form, is frequently a cause of salpingitis; (2) gonorrhœal endometritis is the most frequent cause of pyosalpinx; (3) pelvic peritonitis, in the great majority of cases, is secondary to, and dependent upon, salpingitis, a disease generally caused by endometritis; (4) pelvic cellulitis, a rare disease as compared with pelvic peritonitis, and as compared with the frequency with which it was formerly supposed to exist, occurs during the puerperal state almost exclusively.

Having established the fact that the endometrium is the starting point of inflammations which tend to extend to the tubes, pelvic peritoneum, and in puerperal cases to the pelvic cellular tissue, and that inflammation of these structures seldom occurs except as affections secondary to endometritis—septic, gonorrhœal and catarrhal—the importance will at once be appreciated of promptly treating all cases of endometritis, however mild, and the still greater importance of preventing, as far as we may be able, this common gynecic disease.

A Case of Vaginitis with Gas Cysts, or So-called "Emphysematous Vaginitis."

G. E. Herman (*Lancet*, June 6, 1891). A nullipara, aged 28, married nine years, consulted Herman on June 30, 1890. About six months before he had dilated for dysmenorrhœa. The vagina was at that time healthy. She now complained that for three weeks she had been in constant pain, more or less severe, and had had a slight pink discharge. The vagina felt uneven, as if studded with hard nodules. These nodules were closest together in the posterior wall of the vagina and in its upper half. On looking at them with the speculum they were seen to be grayish-black, tense vesicles, in size from that of a hempseed to that of a pea. Each vesicle, when picked, collapsed with a distinctly audible pop, no fluid coming out. He poured water into the speculum and then picked one of the bladders, and a little bubble of gas rose through the water. All the vesicles were picked. Subsequently the patient was examined, but no more bladders made their appearance. The discharge soon ceased. The husband had had no recent venereal disease. Herman has collected twenty-one similar cases. Seventeen occurred in pregnant or recently-delivered women, and only four apart from pregnancy. In most of the cases it is said to have been accompanied by a copious discharge, and in some this is said to have been gonorrhœal. As to its pathology, it appears that Schroeder's view is probably correct, viz., that it results from decomposition of secretion retained in vaginal follicles. Granular vaginitis, in which the vagina is studded with papules, which there is good reason to think are inflamed follicles, is not very uncommon.

The Treatment of Fibroid Tumors of the Womb by the Injection of Ergot into their Substance.

J. Schenck (*Journal of the American Medical Association*, June 27, 1891) has been unable to find record of ergot having been injected directly into the morbid growth itself in the treatment of fibroid tumors of the womb. He has administered it several times in this manner with satisfactory effects. The first case was 52 years old. She had a tumor of about the size of a goose-egg. Half a drachm of fluid extract of ergot was injected, by means of a hypodermic syringe, into the substance of the tumor, once a week for two months. At the end of this time the tumor suppurated and was expelled. The patient recovered. The second case had a well-defined intra-mural tumor, the size of an orange. Half-drachm doses of ergot were injected daily for eighteen days. At the end of that time the metrorrhagia had ceased. No mention is made as to the reduction in size of the tumor. The third case had a hard tumor, the size of a child's head, in the lateral wall of the womb. Half a drachm of ergot was injected once a week for five months; this controlled the hemorrhage during that time. At the end of this time the tumor was found to have pushed itself into the uterus, and become pedunculated. It was removed by an écraseur. The substance of the tumor was soft and friable, and would probably soon have broken down in suppuration. Schenck has not observed any serious effects resulting from these injections (?); in a few instances a slight chill, accompanied by moderate fever, followed the use of the syringe; but these symptoms subsided in the course of a few hours. He has several other cases under observation.

The Surgical Treatment of Imperforate Hymen.

James F. W. Ross (*The Journal of Gynæcology*, June, 1891) has come to the following conclusions as regards the proper method of procedure in imperforate hymen, with accumu-

lation of menstrual blood in the vagina, uterus and tubes. First, warn the husband of the danger of the operation. He has collected from the literature 36 cases, with 3 deaths, a mortality of 8 per cent. Second, give the patient an anesthetic. Third, incise and tear the hymen freely. Fourth, wash water in at once to take the place of and to wash out the blood and debris; wash until the water comes out clear. Several quarts will be required. Fifth, pack the cavity full of iodoform gauze; use no compression on the abdomen. Sixth, stitch the internal and external mucous surfaces of the hymen together. Seventh, apply an antiseptic pad to the genitals. Eighth, remove the gauze in forty-eight hours, wash out cavity and re-apply gauze. Ninth, keep the patient in the recumbent posture for two weeks, and in bed or on a sofa for a week or ten days longer. Tenth, if symptoms pointing to ruptured or leaky tube with accompanying peritonitis set in, open the abdomen, remove the cause of the peritonitis, if possible, wash out the peritoneal cavity and drain. To be successful this must be done early.

Vaginal Hysterectomy.

E. E. Montgomery (*The Journal of Gynæcology*, June, 1891) has performed this operation six times, with one death. Of this series of cases, four were undoubted cases of malignant disease, one doubtful and one multiple myoma. The first case, which was one of cancer without return two and one-half years later, can be claimed as an absolute cure. He claims that the experience of the present day abundantly justifies us in urging vaginal hysterectomy in all cases where any part of the uterus is the seat of malignant disease, provided only that it can be demonstrated that the disease has not as yet passed from the uterus into the surrounding tissues, and, in case of doubt, the patient should be given the benefit of the doubt and the organ removed. He urges the use of the clamp to control hemorrhage as preferable to the use of ligatures. The operation may be done in suitable cases as safely as ovariotomy and is to be as urgently recommended.

Ovulation and Menstruation: their Dependence or Independence.

Geo. R. West (*The Journal of Gynæcology*, June, 1891), in a lengthy article, arrives at the following conclusions: First, that the increased familiarity with the pelvic organs, the result of modern surgery, has not materially added to our knowledge of their functions. Secondly, that though the ovular theory of menstruation has not been overthrown, yet the weight of evidence is against it. Third, that the most recent observations point to a nervous common origin for both ovulation and menstruation, and yet an individual independence.

MISCELLANEOUS.

LEIDY CHAIR OF ANATOMY AND LEIDY MEMORIAL MUSEUM.

The notification of efforts to establish the following monuments to Dr. Leidy, appropriate to his life and character, is respectfully submitted to the attention of the readers of the University Medical Magazine.

a. Leidy Chair of Anatomy.

It has been decided to raise a fund for the endowment of the Chair of Anatomy in the University of Pennsylvania, and that this chair shall then have conferred upon it the illustrious name of Leidy. He held the Professorship of Anatomy for thirty-nine years, and his services and labors gave it imperishable

fame. No more fitting memorial can be found for this great man and beloved teacher. This appeal is made at an auspicious moment. The University has decided upon the establishment of a four-year course of medical study. The profession and the entire community are profoundly interested. The future of medicine in America will be greatly affected by the success of this effort to place medical education upon its proper elevated and disinterested basis. All contributions to this fund for the Leidy Chair of Anatomy will count directly in the General Endowment Fund of $250,000 for the Medical Department, which, according to the terms of Dr. Pepper's subscription of $50,000, must be secured before June 1, 1892.

It is trusted that the nature of this appeal, the character of the man to be honored, and the magnitude of the reform to be instituted, will insure a prompt and adequate response.

Subscriptions may be made payable at once or in instalments, over not more than five years. Contributions of all sizes will be received gladly. It is designed to make this a general tribute to this great man. Yours respectfully,

C. S. Bement, C. C. Harrison, Wm. Pepper, Joseph Wharton,
R. R. Corson, S. Weir Mitchell, J. C. Strawbridge.

Checks should be drawn to order of Robert R. Corson, Treasurer, 37 Forrest Building, Philadelphia.

b. Leidy Memorial Museum.

The greatness of Joseph Leidy was conspicuous in many branches of natural science. His attainments were as varied as they were profound. His life was devoted to the collection, preservation and study of natural objects. His sole purpose was to disclose more and more the truths of nature. The spirit of devotion, of wisdom and of simplicity displayed in his lifework was worthy of its lofty object. No memorial of Joseph Leidy can be more fitting than a museum in which will be garnered the infinite variety of natural objects which formed the basis of his admirable studies. It has therefore been decided to raise a fund to establish and endow the *Leidy Memorial Museum* as an independent part of the great museum now forming at the University of Pennsylvania. The amount desired for this purpose is $50,000. It is felt to be eminently proper that the interest derived from this fund shall be devoted exclusively to Dr. Leidy's family during the lifetime of his widow.

Subscriptions may be made payable at once or in instalments extending over two or three years as may be approved by the donors. Contributions of all sizes will be received gladly. It is designed to make this a general tribute to this great man.

C. S. Bement, C. C. Harrison, Wm. Pepper,
R. R. Corson, S. Weir Mitchell, J. C. Strawbridge,
Jos. Wharton, Jos. Willcox, Trustees.

Checks should be drawn to the order of Robert R. Corson, Treasurer, 37 Forrest Building, Philadelphia.

July, 1891.

PERSONAL NOTE.

Dr. J. P. Crozer Griffith has been elected Professor of the Diseases of Children, in the Medical Department of the University of Pennsylvania.

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ORIGINAL ARTICLES.

ADDISON'S DISEASE; PYOTHORAX; ACUTE INFECTIOUS LOBAR PNEUMONIA; HYSTERICAL SPASM.

By James Tyson, M.D.,

Professor of Clinical Medicine, University of Pennsylvania.

A Clinical Lecture Delivered at the University Hospital.

[Reported by W. E. Robertson.]

The morbid specimens I exhibit are derived from an interesting case which I had hoped to show to you, but the patient died rather unexpectedly last night. I will, however, review the clinical history, and we will then proceed to examine the pathological specimens.

The man was 35 years of age, born in Mount Holly, N. J., and had always lived there. He was a shoemaker by occupation.

Family History.—His father is living and healthy, and is 63 years old. Mother died at 48 of carcinoma of stomach. No other history of cancer in the family. His grandparents, both maternal and paternal, lived to be 80 or 90 years of age. He has three brothers and sisters, living and healthy. One brother died of scarlet fever. One paternal aunt died of tubercular phthisis, as did several other members of the family.

Personal History.—He had the ordinary diseases of childhood, except scarlet fever. In 1876 he had an attack of double pneumonia, and was not able to do anything for eighteen months. After fully recovering from the attack, he had good health for three years, when he was seized with an acute attack of muscular rheumatism, which left him delicate and susceptible to every slight change in the weather. He has not had unusually hard or fatiguing work, but has had considerable mental worry for some time past. He worked

at his trade until May, 1890. For some little time previously, however, he complained of a feeling of malaise and general debility. In May, 1890, while at work, he noticed a slight pain in his head, followed by loss of sensation and motion in his right side. Then he became unable to speak, and soon lost consciousness. In about twenty minutes he recovered, regained his voice, and went about his work. Next day he went to work as usual, but became faint and dizzy, and had to desist, and has never been able to do anything since. After that he had chills and fever, said to be malarial, and his strength gradually failed. About two years ago he first noticed an enlargement over the lower dorsal spine, which gradually increased. Previously he had felt weak and languid, as mentioned above. Finally, after assuming a recumbent position, he was so weak that he could not raise himself without help. He had also had dyspepsia for two years, though it only gave him serious inconvenience after indiscretions in diet. Appetite was voracious until six weeks ago. Bowels regular for the past eight or nine weeks, but prior to that time they were constipated. Passed water frequently and in large quantities. His skin was the seat of a congenital icthyosis, but in addition since last August he had noticed it assuming a darker hue, and especially on exposed parts it has acquired a bronzed appearance. His fingers are clubbed and features pinched. He complains of some girdle pain. He can stoop without any difficulty, but the whole spine moves as if it was one piece. He himself said he had no lung trouble, "merely an occasional cough," none at present, and no diarrhœa.

We have here a most interesting group of facts. I wish to call your attention to the almost total denial of symptoms pointing to lung trouble—cough, pain or expectoration—and caution you to place little reliance in such statements. Physical examination revealed signs of tubercular disease at both apices, while the disease of the vertebræ was also probably tuberculous, the usual morbid anatomy of caries. Heart sounds were fairly strong. Skin decidedly bronzed. Uniting this history of general tubercular disease with the fact that the skin is bronzed, the diagnosis of Addison's disease, consequent on tuberculosis of the supra-renal capsules, was promptly made.

Now, what is Addison's disease? It is a disease, characterized by bronzing of the skin, accompanied by certain subjective symptoms, as gradually increasing weakness, anorexia, dyspnœa, headache oftentimes, and sometimes gastric derangement and diarrhœa. Modern accurate methods have resulted in the discovery of alterations in the blood. An examination in this particular case gave a count of 4,875,000 red blood corpuscles per cmm., and the hæmoglobin reduced to sixty-five per cent. instead of the normal 100, though, in point of fact, ninety or ninety-five per cent. is rarely reached in health. So we can not say the alterations here were of a very profound character.

As I stated, the man died rather more quickly than we had anticipated, so I present the morbid specimens for your examination. First, we will examine the supra-renal capsules, and you will notice that they are in an advanced stage of tubercular disease. Now, Dr. Thomas Addison in 1855 discovered and announced that, in the disease marked by bronzing of the skin, extreme weakness, asthenia, etc., the supra-renal capsules were involved, and that they primarily produced the disease. Subsequent observers were not long in confirming his observations, though the lesion of the capsules was found to be not invariable. The next question which arose was, as to the nature of the disease of the capsules. It was soon learned that, in decidedly a majority of the cases, it was tubercular; hence, given bronzed skin and great asthenia, evidence of tubercular disease should be always sought. It was on this account that an

immediate examination of the lungs was made in this case, resulting in a confirmation of our suspicions. The kyphosis pointed in the same direction. The autopsy revealed both apices to be the seat of extensive disease, the right more than the left. I did not investigate the condition of the vertebræ, but there is no doubt in my mind as to the form of disease there. To complete the autopsy, we found two lumbricoid worms in the bowels, thus showing how these round worms may be present without producing any symptoms. The autopsy also revealed something which we did not discover in the physical examination—I refer to extensive adhesions, the result of pericarditis. When it occurred in the history of the case we do not know, though there is an ample explanation in the attack of rheumatism which he had.

No one has as yet suggested an explanation for the bronzing of the skin, but further investigation has discovered frequent associations of changes in the sympathetic system, in the solar plexus. I am able to show you the enlarged ganglion among the specimens before you. This is a fact of importance, as it has been found that bronzing of the skin has occurred when the supra-renal capsule was not involved, but the sympathetic system was, *i. e.*, the solar plexus. Now, the close connection between the capsule and the ganglion is well known, and it may be that the capsule is only affected secondarily, through degeneration of the afferent and efferent nerves which run between the plexus and the capsule. While tubercular disease, as I have told you, is at the bottom of this trouble in a vast majority of cases, there are occasional exceptions. Both fibroid tumors and cancer involving the capsule have been attended by bronzing.

The prognosis in these cases is always unfavorable; though we can mitigate the symptoms and delay the end, no cure has yet been discovered. Sooner or later they die as a result of exhaustive weakness. We are unable to explain this exhaustion and weakness, which terminate in a fatal asthenia. It was at one time thought to be due to the involvement of the supra-renal capsules as blood-making organs, but this has not been substantiated by recent observations. They are no longer classed in the same category as the spleen, medulla of bone and lymph-glands.

The treatment is principally symptomatic. We aim to restore the condition of the blood, and, of course, iron is indicated *par excellence* in such cases. It is usually associated with that other tonic which is so constantly used with iron: I refer to arsenic. An excellent preparation of arsenic is the solution of the chloride, which is as good as Fowler's solution, and mixes nicely with the chloride of iron. Thus:

℞. Liquor. arsenici chloridi . . . . . .
Tinct. ferri chloridi . . . . . āā ʒii.
Aquæ . . . . . q. s. ad . . . . . ʒiij. M.
Sig.—One teaspoonful three times daily in water.

Or the iron and arsenic may be given in pill form as the carbonate of iron and arsenious acid. But, as I said, the patient will inevitably die. In the present case, sudden death may have been precipitated by the firm adhesion of the heart to the pericardium.

The next patient, a young man of 21, gave a history of pleurisy succeeding a serious muscular wrench, brought about in an unsuccessful attempt to mount a horse. He severely strained the lumbar muscles. While in this condition he suffered exposure, and an attack of pleurisy was the result, developing into an empyema. As soon as we learned there was pus in his thorax, Professor Ashhurst opened the chest freely and introduced a large drainage tube. We resorted to this means promptly, as we knew that the pus would reaccumulate with each tapping, and because, with the continuous pressure upon them, the lungs were certain soon to lose their resiliency and ultimately fail to expand even when the fluid was removed. The drainage tube is often too long deferred. Should even the case recover, the extraordinary large extent of pleural surface which must heal over produces a corresponding extent of cicatricial surface which must contract, distort the chest and compress the lungs. The extreme results of this effect are displacement of the heart, retraction of the chest, and even lateral curvature of the spine. We are washing the cavity in this case with a boric acid solution, seven grains to the ounce, with a gradual diminution in the amount of discharge. As soon as it becomes clear, and all signs of pus cease, we will stop the treatment. I am always astonished at the enormous accumulation of leucocytes which gather under the circumstances, and ask myself the question, "Where does the vast number of white blood corpuscles come from?" The proportion normally in blood is only one white to 300 to 500 red disks, yet in this condition there will accumulate in a few days eighty ounces or more of pure pus, made up of white corpuscles and serum. I do not think the problem of the pus-cell is yet quite solved.

The most gratifying results have followed this operation. The temperature, which ranged from 100° to 102°, and even higher, has fallen to almost normal; his breathing rate, which was at times over fifty, is reduced to twenty and a little over, and his increased comfort is unspeakably great. His appetite is enormous, the daily discharge of pus grows less, and we hope to see him quite recovered in a few weeks.

Again I have some pathological specimens which I wish to show you, as they are of special interest in connection with the history of the case, which was a very sad one. The patient was a medical man, 36 years of age, who came to Philadelphia with a patient, arriving on a Wednesday evening, and complained of not being very well. Thursday he took a chill in the boarding-house at which he was staying. He came under the care of Dr. H. C. Deaver. By Saturday it was recognized that he had pneumonia. He was admitted to this hospital on Monday morning following, and presented all the physical signs of acute lobar pneumonia of the base of the right lung. He did not seem to be very ill. It was too late to employ active antiphlogistic remedies, if they were needed, though later developments seem not to have indicated them. Locally we employed counter-irritation by means of turpentine, and had the side well blistered. On Tuesday and Wednesday, and even Thursday and Friday, we still considered it was a mild case, resolution was evidently taking place, air began

to enter the lung, and resonance to appear. The temperature, however, did not seem to lower, and the crisis for which we began to look did not appear, and I thought the case might terminate by lysis. On Saturday he was worse, and physical examination discovered that, while the lower part of the lung had cleared up, the upper lobe was consolidated. On Sunday morning he was evidently very much worse. Delirium, which set in on Friday, became very active, and he had to be restrained. The pulse began to flag and become irregular. Its normal rhythm was restored for a time by the use of digitalis, but the effect was temporary. He was freely stimulated throughout his illness, receiving a half ounce of whiskey every two hours, toward the close. On Monday he had a frequent, almost uncountable pulse and much delirium. I examined him that morning and found the lower part of the right lung quite resonant, but the upper part remained consolidated. He died a little later. A necropsy was permitted, and I now present the results. You will observe that the lower lobe is in a state of resolution, as the physical signs showed, but as we approach the apex, we find it in a condition of gray hepatization, having passed the stages of congestion and red hepatization.

It was more particularly for the purpose of calling your attention to the etiology of pneumonia that I presented this case. The aspect of the case from the beginning until three days before his death was that of a mild one. At no time was there high temperature, in fact the highest was only 103°, and at no time was there much involvement of the lung, yet he gradually perished with typhoid symptoms.

I believe there is a pneumonia of a distinctly infectious type, of which this may be an instance. There are numerous cases recorded in which one member of a family will be attacked with pneumonia, and, shortly after, others of the same family, in rapid succession. A large number of a ship's company at sea have been similarly attacked. This type is an infectious disease, as the name signifies, due to the introduction into the body of some specific cause, possibly a micro-organism, the pneumococcus of Friedländer. On the other hand, I believe we have a pneumonia which is purely local; as, for example, when a strong and previously healthy man suffers severe exposure to cold, becomes thoroughly chilled, comes home and has a chill, followed by pneumonia. Hence I believe there are two kinds of pneumonia, one specific, as already indicated, the other purely local, in which the prognosis is less grave. The great difficulty which confronts us when a patient presents himself with symptoms of pneumonia is, to decide which of the two forms we have to deal with. Therefore, I should advise you to be extremely cautious as to your prognosis. Many a case begins mildly, but erelong assumes the most grave character, as evidenced by this case. I would myself prefer to encounter a case frankly grave at the outset. Such a case can be vigorously attacked with some expectation of success. This was never a case for active treatment of an antiphlogistic kind. There are those who regard every case of pneumonia as infectious, and who claim that it is as unreasonable to treat it locally as it is to treat typhoid fever locally. To such doctrine I do not subscribe. I treat every pneumonia locally. It certainly does no harm to counter-irritate by mustard or turpentine,

and even to blister, and I do not hesitate to bleed a sthenic case. As for the rest, I treat the disease symptomatically with digitalis, quinine, strychnia, food and stimulants as required.

The next patient I show you is 24 years of age. She had measles and a bad attack of diphtheria as a child, and had two subsequent attacks of diphtheria at 16 and 20. With these exceptions there was nothing peculiar in the illnesses of her childhood. She began to menstruate at 14 and experienced some difficulty. Her menstruation was not natural. At her periods and between them, she would have fainting spells, and they recurred at each period until she was 18. Finally, when these attacks would come on, she would suddenly fall. In January, 1889, when having one of these fainting spells, she fell and struck her back, she says, on a stone. No immediate results followed, but some days afterward she noticed a loss of power in her legs, and she grew weaker, until at length she was unable to walk. She went to bed and remained there for a period of six months. After taking to her bed she would fall into a stupid, drowsy condition at various intervals of time and would remain so for ten or twelve days. At such times it was with difficulty that she could be aroused. Upon coming out of the attack she complained of feeling cold and heavy, more particularly as to her legs. When admitted to my wards in March, her left leg was in a state of fixed rigidity, and she seemed to suffer greatly with any attempt to bend it at the knee or flex it at the hip. There was also great tenderness on pressure on the spines of the vertebræ. Careful examination of the hip-joint by Dr. Ashhurst discovered no disease of the hip, and with the history presented we suspected the case to be one of hysterical contracture.

Our reasons for so concluding were chiefly her apparent perfect health, her good color, and the absence of wasting of her legs. The muscles of the leg and thigh were perhaps a little softer than those of the other side, but not more so than was to be expected from a disuse of nearly two years. The question was settled by etherization, under which the rigidity of the legs disappeared completely. There was also, by the way, very positive anæsthesia in her left leg. In fact, you could thrust a pin up to its head into the limb, and she would not flinch.

The diagnosis once made, we regarded the wards a most unsuitable place for her treatment, because of the confusion and noise always present, so we advised her to take a private room, which she did. Our treatment then consisted, first, in forcible flexion. The resident physician, Dr. Strayer, spent a great deal of time and trouble in furthering this end, until he could flex the leg with facility and without pain to her. After pursuing gentle but firm efforts for some time, we had her make her own efforts at flexion and extension, and she gradually acquired a power to do these completely. We also employed massage to restore a free circulation and tone to the muscles, and the electrical brush with faradization, to invite back the sensibility of the part. We were finally able to convince her, as well as to satisfy ourselves, that there was no disease in the joint. Of course there is some weakness, owing to the long-

continued disuse, but I predict, that if she perseveres, she will be able to walk in three months. She already walks with a little assistance.

When such cases present themselves, one must be absolutely sure that no actual lesion exists, before one pursues the course of treatment suggested for hysteria. Having satisfied yourselves, you will then employ massage and electricity, then such remedies as seem indicated by the general symptoms. In this case there was not much anæmia, but we gave her arsenic and iron; and for the constipation, which was rather persistent, we used a pill of aloes, strychnia and belladonna.

The next case I regard as very similar to the last. The patient is a man, 49 years of age, a bookbinder by occupation, and of German birth. He was admitted to this hospital 1st June, 1891. He complained of paroxysmal severe pains in the abdomen, to the right of the umbilicus. The pain was not confined to this locality, however, but, to use his own language, he "felt the pains shooting all over him, never remaining in one place for very long at a time."

His father and mother died, when he was a child, of unknown cause. He has two sisters living and in good health. He states that when he was five years old his parents went as pilgrims to the Holy Land, and that from that time until fourteen years ago—*i.e.*, for a period of about thirty years—he drifted about Egypt, Palestine and Syria, always having enjoyed pretty good health, however, except for an occasional attack of malaria. In January, 1890, he was ill with influenza, which compelled him to take to his bed for a month, after which he was in pretty good health until November 27 of the same year, when, after doing some heavy lifting and overworking himself, he gave up, and has since been troubled with these peculiar, vague and lancinating pains. At first they were almost constant, and in the abdomen, to the right of the umbilicus, though they manifested themselves in various parts of his body. He was treated for various diseases, gout, rheumatism, gastritis, hepatic and splenic troubles, etc., in various institutions, until he drifted here. His present condition is as follows: Pain, as already referred to, varies greatly, sometimes so severe as to cause dyspnœa. He is a well-nourished man and looks quite healthy. A physical examination shows the liver and spleen to be of normal size, and fails to reveal the evidence of any abnormal growth. On referring to the chart, you will observe the temperature has been essentially normal throughout. His bowels are constipated, and his tongue a little coated. No history of shortness of breath on exertion. In fact, I believe this to be a case of hysteria, and that there is no organic disease whatever. He has led a wandering and irregular sort of life, and has been under almost a continual mental strain, and, with a wife and children to support, has had to struggle for his existence. Finally, a year ago he had influenza, and the well-known depressing effect of this malady must be added to the others already in operation. One point which I am inclined to regard as a proof of the diagnosis is the fact that he is so well nourished, and that instead of losing weight he is gradually gaining. Then, too, I may add, his temperature is normal.

The results of treatment are further confirmatory of the diagnosis also.

As long as we did nothing positive he had pain, but last evening we used croton oil as an external irritant, and although the effect was quite superficial and slight, this morning he said he felt relieved. It is possible we may be mistaken, but the diagnosis is the result of very careful investigation, and the treatment tends to confirm it.

As to the prognosis, I think we may hope for a favorable one, as in the previous case. In the case of the girl it would not have been well to tell her she had nothing the matter with her, but was simply hysterical. Here, however, we will explain soon that nothing is wrong with him organically, but that owing to his previous life, and the continual mental worry, he has become run down and nervous, and that a few weeks of rest and building up will restore him to health.

SILICATE OF SODA AND ALUMINIUM AS A SURGICAL DRESSING.

By G. G. Davis, M.D., M.R.C.S.,
Assistant Surgeon Orthopædic Hospital, Dispensary Surgeon to the Episcopal and Children's Hospital.

The substance known as "soluble glass" has been in use among surgeons since 1865, but it has never attained that popularity to which I believe it to be entitled. It was only after Wagstaff's article appeared in the *Medical Times and Gazette* of 1874 that it began to be employed in England, and even to-day it is rare to see it used.

This is largely due to the fact that plaster of Paris is much better known; of its superiority for some purposes there can be no doubt.

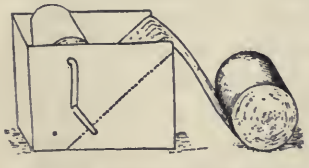
There is, however, a place in surgery for the silicate dressing, and those who wish to do the best work will, I am sure, appreciate its value when once their attention is directed to it. Soluble glass is made by fusing together powdered quartz with the carbonates of sodium or potassium; some other substances are added for the purposes of purification. The resultant mass is powdered and dissolved in hot water and evaporated to a proper consistency. The silicate of soda is the preparation usually enployed, and, as we find it, is a syrupy liquid of a light yellow color, soluble in hot water. On exposure to the air it dries, leaving a hard glistening surface. In making a dressing it has been used in three different ways: first, spread over the completed dressing with a brush; second, the bandage being first soaked with the material and then applied; and, thirdly, pieces of stuff cut to any desired shape have been soaked in the silicate and applied to the part. The judgment of the surgeon must lead him to select whichever of these three methods he wishes to employ, and he will decide according to the peculiarities of the case or his own preferences. The amount of satisfaction to be derived from the use of the dressing is directly proportional to the manner of its application.

Incorrectly applied it will certainly disappoint the surgeon, but correctly applied it will prove invaluable. The greatest objection to the use of silicate of soda has been the length of time it takes to harden. This is the case when several layers of bandages are applied and a large amount of silicate used. When so made it hardens quickly on the outside and confines the moisture, and thus is prevented from drying for two or three days. The object should be to so apply the bandage as to have it dry as quickly as possible. When applied with a brush, two layers are the most that should be employed; if three or more layers are used the middle ones are confined by those on the outside, and are apt to remain moist and soft a long time. As the material is only smeared on the surface of the bandage, it also has not the strength which is found when the silicate is in the meshes of the stuff. For these reasons I seldom use it in this manner. As a roller bandage can be used for almost all purposes, I have rarely found it necessary to cut special pieces of material with which to make the dressing. The bandages usually used have been the ordinary muslin ones, although flannel or gauze could be employed if preferred, and no doubt with the latter some very light and elegant dressings could be made. In preparing bandages for use they may either be rolled by hand or by a machine. If it is desired to prepare them by rolling them with the hands, some silicate of soda is put in a basin and the roller bandage laid therein. The loose end of the bandage is then taken and rolled up with the two hands, as shown in the illustration, the original roll unwinding as the new roll is formed. As soon as the whole bandage is completed the roll is squeezed as firmly as possible with the hand so as to express all superfluous silicate. Sometimes I even wash off the adherent silicate by holding the roll under a tap of running water for an instant or two. This is the most important part of preparing the silicate bandage for use. The material should be in the meshes of the stuff, and not on its surface. A failure to observe this point will result in the production of a thick, slow-drying bandage that will not be at all satisfactory.

FIG. 1.

Bandages are better prepared by machine than by hand, as they are more tightly wound, and the silicate is pressed into the meshes better, and the superfluous silicate is all on the outside of the roll, from which it can be readily removed. The machine I use for preparing these bandages is shown in the accompanying illustration. The bandage passes over the end of the inclined plane, down into the silicate, under the wire rod near the bottom and up to be wound around the winch exactly as shown in the figure. For dispensary use these bandages can be kept already prepared and covered with the silicate in a sealed jar. When desired for use a bandage can be taken out, the superfluous silicate washed off, and it is ready for application. When a firm, strong dressing is desired it is better to stiffen the bandage by inserting

FIG. 2.

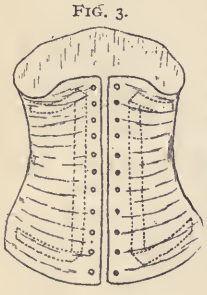


strips of thin metal rather than by increasing the layers of the bandage. For this purpose thin strips of sheet-spring brass are better than tin, and aluminium is best of all. This is light and does not corrode, and if cold-rolled is stiff enough. Two ounces, costing from fifty cents to a dollar, according to how and where you buy it, will be enough for a spinal jacket for a child 10 or 12 years of age, and in conjunction with the silicate bandage makes a spinal support that is cheap, light and very efficient.

The mode of applying the bandage differs somewhat according to the object desired, but more than four or five thicknesses of bandage for a jacket, and two or three for knee-caps and stockings are not desirable, and the silicate should *not* be smeared over the bandage when one layer is completed. (There are two thicknesses of bandage to a layer.) If these suggestions are ignored the resultant bandage will be both heavy and slow drying. Some of the affections for which I have used the silicate-of-soda bandage are: spinal disease, affections of the hip and knee joints, to support varicose veins, in fractures of the clavicle, dislocations of the shoulder, and many injuries.

In making a spinal jacket, a close-fitting shirt is placed on the child, and to it are sewn pads to protect the hips, axillary folds and any projection of the spine. The child being placed flat on its back, a silicate-of-soda bandage is applied from the trochanters to the axillæ; as few reverses as possible (usually none) are made, and the bandage evenly laid on. Six strips of aluminium are then taken, two for the front, two for the sides, and two for the back. The strips for the front and back are to be longer than the jacket, and are to be bent near their ends at a right angle. Two of these strips are placed in front, two or three inches apart, with the upper ends going over toward the axillæ, and their lower ends toward the crest of the ilia, as shown by the dotted lines in the illustration. The two strips on the back are placed in a similar manner, and those on the sides go from the upper edge of the trochanters to the axillæ. After being bent to conform to the surface of the body, they are covered in with an additional layer of silicate bandage, and the end plastered down with the solution and some of the solution diluted with two parts of water, used in spots to make the bandage lie smooth and flat. The completed jacket is *not* to be smeared over with the thick, undiluted silicate. If possible, the child should be kept abed on its back until the next day, but if it is a dispensary case it may be kept quiet for an hour or two, and then taken home and put to bed until the next morning. If metal strips have been inserted, this can probably be done without much injury to the jacket, but if none have been used it will injure the jacket to allow the child to go home at once. When the patient returns in a few days the bandage is to be cut up the median line in front, and eyelets inserted on either side, the cut edges being smoothed with a little silicate and the jacket laced on again. Holes may be punched in the jacket for ventilation if desired. In the same manner splints can be made for hip and knee-joint diseases. The method of bracing the latter is shown in the

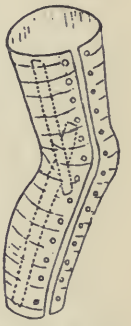
FIG. 3.



accompanying figure; the aluminium strips project beyond the point of crossing. The bandage should be cut down in front just along the outer edge of the patella, instead of directly over it.

For use after resection of the knee this makes one of the most efficient and satisfactory splints that I am acquainted with. In fractures of the clavicle, particularly in children, a silicate-of-soda bandage laid on over the usual dressing will remain in place for one or two weeks if desired, a thing which can be said of very few other dressings. In a case of repeated dislocation of the shoulder, I made a very efficient apparatus by a posterior figure-eight bandage, and when it had hardened dividing it between the shoulders and inserting eyelets and lacing it firmly on. As a substitute for elastic stockings and knee-caps, I know of nothing which equals a *light* silicate-of-soda bandage. In varicose veins of the leg a silicate bandage can be applied over a stocking, leaving the heel uncovered. In a couple of days it can be cut off and laced up, or may be worn as it is for two or three weeks and then a fresh one applied. When a patient desires to move around, as in wearing a knee-cap, elastic lacings may be used instead of the ordinary corset strings. Where some movement is desired, care should be taken not to make the bandage too thick, and evenness of application is always necessary and must be cultivated. The treatment of fractures by more perfect rest is becoming more firmly established, and nothing is nicer for this purpose than to apply a silicate bandage over the ordinary dressing and splints. This can be made to lace or not as desired. In the same manner, after extensive operations, a silicate bandage can be laid on over the ordinary bandage, and it will insure it against displacement.

FIG. 4.



Many other cases will occur to those who practise surgery where the silicated bandage will be found quite useful, and it is not necessary for me to mention any more. The dressing can readily be removed by cutting it with a penknife blade from below upward, or by the use of a strong pair of scissors, such as are used for plaster dressings. Windows can readily be cut in it with a penknife, and any desired spot can be softened by holding on it a compress wrung out of hot water.

In conclusion, I hope that those who try this dressing will not be disheartened if their first attempts are not crowned with the success that they expect. It requires a dexterous hand to apply a bandage evenly, and to avoid making it unnecessarily thick in places. Never smear the thick undiluted silicate on, and keep your patient as quiet as possible for the first ten or twelve hours after it has been applied (this applies to the back, hip and knee cases), and after a little experience a jacket or splint will be the result that will please the surgeon and be a great comfort and aid to the patient.

STRICTURE OF THE AUDITORY CANAL, THE RESULT OF A LOW-GRADE MIDDLE-EAR SUPPURATION.

By L. J. Hammond, M.D.,

Surgeon in Charge Beacon Ear, Nose and Throat Dispensary; Assistant Aural Surgeon, University of Pennsylvania.

Stricture of the auditory canal, complicating suppuration of the middle ear, is one of the most annoying conditions to treat, and one of the most dangerous if neglected; for as the condition advances the constriction becomes greater and greater, until, eventually, there will be almost or even complete occlusion of the canal. It is at this stage, unless active measures are taken to remove the cause as well as the constriction, that great damage will be done to the entire organ of hearing; even the life of the patient may be sacrificed by involvement of the meninges of the brain or by abscess.

The condition is found in persons of a strumous diathesis, generally in children between the ages of 7 and 12 years. The origin of the scanty discharge is probably from the extension of inflammation from the naso-pharynx, as in more active suppurations. It is, however, unaccompanied by pain of sufficient severity to cause the patient any uneasiness. The absence of pain is explained by the fact that the low grade of inflammation, causing a very scanty discharge, which is ichorous in character, ulcerates the membrane, and leaks into the external canal before the middle-ear cavity is sufficiently distended to cause the throbbing pain so common in acute active inflammations. The itching and aching complained of by the patient probably are the result of the ulceration.

When the discharge, which is scanty and of a watery, irritating nature, is once in the canal, being at no time sufficient to overflow the slight depression of the canal external to the membrane, it irritates at once the epithelial surfaces of the canal at this point, causing ulceration, as a result of which a distinct band of connective tissue is formed, corresponding to the ordinary lymph wall of an ulcer. The constriction increases, as it has now, in addition to the irritating discharge, a mass of inspissated pus and exfoliated epithelium, both of which materially aid in forming a complete stricture around the entire canal, the position of which, in the four cases that I have seen, has been about one inch from external orifice.

The report of two cases, one showing the great danger which results from lack of treatment, the other the good results following early treatment, may be of interest at this point.

Case I.—Boy, aged 12 years. General appearance was clearly one of malnutrition, being very anæmic. Twelve months before he experienced itching and dull aching in right ear, and, at times, slight discharge from canal, very fetid in character. No attention was given to this symptom until five months after the symptoms noted appeared; I was consulted then for a large, boggy mass extending over the entire mastoid, which the mother stated had been present for three weeks, gradually increasing in size. On examination, hearing was found

entirely absent on affected side; very scanty, fetid discharge from external canal, on the removal of which, with peroxide of hydrogen, the cause of trouble was clearly seen to be a stricture, which was about three-quarters of an inch from external orifice. The temperature then being 102° F., pulse 120, I advised immediate operation, which was done by incising, with small, blunt-pointed bistoury, the stricture at four points, namely, one on floor, roof and on each side, carrying my incisions well down to the bony canal. When it was made possible to explore the cavity behind the stricture, the soft parts were found to be entirely destroyed, and on the removal of the accumulated mass in the cavity the bony wall posteriorly was found necrosed. The mastoid region was then thoroughly cleansed by making a free incision over the swollen portion, cleansing away the large accumulation of pus, after which the necrosed tissue was curetted away, which included the bony canal posteriorly. After thorough cleansing with peroxide of hydrogen the mastoid was packed with iodoform gauze, and the stricture was kept opened by the use of salicylated cotton plugs, which were removed daily; and after thoroughly cleansing and curetting the necrosed bone that could not be removed, the same form of dressing was continued for fourteen days, at the expiration of which time the stricture had been entirely removed, and the conditions which had arisen secondarily to it were greatly improved. At the end of eight weeks the boy had entirely recovered, not, however, without loss of almost the entire bony wall and mastoid region.

CASE II.—Boy, aged 8 years, was brought to the Beacon Dispensary, with history of loss of hearing on right side for seven months, with scanty fetid discharge from canal. The general appearance of child indicated malnutrition. On examination there was found a scanty fetid discharge from external canal, upon the removal of which, with the peroxide of hydrogen on cotton applicator, the canal was seen to be almost entirely occluded about three-eighths of an inch from external orifice; so sharply defined was the stricture that it resembled very much a thickened tympanic membrane, with a depression in its upper anterior portion. On passing a small silver probe through the opening, which caused intense pain, it was clear that a cavity filled with broken-down epithelium and desiccated pus had to be dealt with. There was, in this case, no involvement of mastoid; but as it would have been impossible to have removed the accumulated material through the constriction, the child was etherized, and four incisions, as in the former case, were made and the accumulation removed with a fine pair of forceps, after which the cavity was thoroughly cleansed with peroxide of hydrogen. The bony canal was necrosed in its upper and posterior portions. The after-treatment consisted in packing the canal thoroughly with salicylated cotton daily after thoroughly cleansing and curetting the denuded bone. After twelve days the stricture was entirely absorbed.

These cases, I think, will serve to illustrate the necessity of early recognition and prompt treatment in cases where the discharge is very scanty. Several cases now under my care would undoubtedly result in a condition similar to those described had they not sought treatment early. They did not, however, consult me for suppuration, but for the intense itching and dull aching which annoyed them, especially at night.

THE PULSE FROM A PRACTICAL POINT OF VIEW.[1]

BY SAMUEL W. MORTON, M.D.,

Physician to Outpatient Department, University of Pennsylvania.

HAVING dwelt at length, in recent lectures, upon fever as a symptom, it seems fitting that we should pursue a study of the pulse.

[1] A lecture delivered in the Spring Course, Medical Department, University of Pennsylvania, May, 1891.

The relationship between the pulse and the body temperature is so intimate and constant that our present subject becomes a natural sequence. The condition of the pulse is much more frequently made use of in the practice of medicine than is the state of the general body temperature. So common is the examination of the pulse in the treatment of the sick, that it is expected of us that we feel the pulse before thinking of prescribing. Since this is true, the moral effect produced is fully worth the time and trouble spent, to say nothing of the information which may be unexpectedly yielded by that little touch of the wrist.

In the febrile state, with an increase in the general body temperature, there is a corresponding increase in the rapidity and force of the heart's contractions. As a consequence, the larger arteries pulsate more vigorously. The smaller ones of the skin are contracted in the chill stage and dilated in the hot stage. The little veins, on the contrary, are dilated and turgid in the chill stage, thus accounting for the livid lips, blue nails, etc., of this stage; while in the hot stage we find them empty and the skin flushed, because of the overfilled condition of the little arteries. Because of these circulatory phenomena of fever, the pulse has acquired especial attention.

Formerly acceleration of the pulse-rate was considered, as abnormal increase of body temperature is now, pathognomonic of fever.

Next in constancy to increased temperature in fever, stands increase of the pulse-rate; they are very closely related to each other, and usually rise and fall together. Abnormal rise in the general body temperature, *i. e.*, fever, is practically always attended by some increase in the pulse-rate; but increase in pulse-rate is, by no means, always attended by fever. It may depend solely upon some other constitutional condition, as marked exhaustion of the general system, anæmia or intoxications, *e. g.*, lead-poisoning, rheumatism, scarlet fever, etc., or upon organic disease of the heart, as certain valvular diseases and fatty heart; or, what is not at all infrequent, to some direct or reflex disturbance of the nerves or centres or both, whose function it is to regulate the movements of the heart.

Other things being equal, for every degree of increase in body temperature above normal, we get an increase of eight or ten beats in the pulse-rate; but it must be constantly borne in mind, when counting the pulse in a febrile case, that one or more of these other causes of increased pulse-rate may be present and upset the usual ratio between pulse and temperature. Remember, though, that while they can cause this irregularity, they are unable to set aside entirely the influence of increased temperature.

It has so happened that, up to this point, I have made mention only of the rapidity of the pulse. While this is the most commonly sought-for character of the pulse, it is by no means the only one which concerns us in the study of disease. The principal characteristics are the regularity, the fulness, the force and the quickness of the pulse. These latter, while less often expected or looked for, are much more difficult to detect than the mere increase in rate; and let me assure you that it requires intelligence and long practice even to distinguish all the different conditions the pulse may assume, and even the oldest, most

skilful and the most practised physicians find in it much that they are unable to interpret. Begin, then, gentlemen, during your course of study here, to fall into the practice of examining the pulse in every case you may chance to study or treat.

When we speak of the pulse, we mean the beating of an artery. Occasionally we find pulsating veins, but they are comparatively rare, and, when present, are spoken of as a "venous pulse," in contradistinction to the "arterial pulse" or "the pulse," the one usually designated. The most convenient artery is the radial, hence it is the one usually selected for examination, and accordingly the one spoken of in medical literature as "the pulse." Occasionally you will have some difficulty in finding it, because of the fact that, not rarely, it takes an anomalous course. The most common position for it in these unusual cases is upon the inner side of the wrist winding over the radius.

In order to interpret the pulse in disease one must be acquainted with its conditions in health. The average rate in the healthy adult is seventy to seventy-five per minute, while in exceptional cases it may run as high as eighty or ninety or so low as sixty, or fifty, even. In childhood it is more rapid than in adults; in old age, on the other hand, it is slower, being about sixty-five to seventy; in infancy it registers about 100; while immediately after birth we find it 130 to 140. It is more frequent in the standing than in the sitting; in the sitting than in the reclining position; and this difference will be found less marked in health than when the system is depressed or exhausted, or the heart itself is the seat of disease. It is on account of this fact that in certain strict examinations—those for insurance, for example—the pulse-rate, both in the sitting and the standing posture, is required. Sex has an influence on the pulse. In women it will average about five points higher than in men. The time of day has its influence; hence the pulse, like the body temperature, is lowest at 1 or 2 A.M. Sleep has a tendency to reduce the pulse-rate. Any physical or mental exertion causes it to become more rapid. It is found to rise generally after a full meal, and always if stimulants be taken with the meal. In habitual alcohol-takers it is apt to be constantly elevated.

In disease the pulse may become too rapid to count, going up to 150, 160, 200 or over. Sir Thomas Watson counted a pulse of 216 and verified it by the aid of the stethoscope. The reason these very rapid pulses are so hard to count lies especially in the fact that they are also very feeble.

Unusually slow pulses are also observed in disease. They may be fifty, forty or even so low as nine to the minute, as was observed by Dr. Chambers, of England, in a case of spinal disease. Sir Thomas Watson has noticed it as low as twenty-two. It may, I believe, be laid down as a rule, that, where a pulse-rate is under sixty, there is some abnormal condition to account for it. Now this rule, like most others, has its exceptions. For instance, I once examined a young man, an athlete, in whom I found no physical signs of disease of the heart or other organs, yet observed, after repeated examinations, a pulse-rate of fifty per minute, a respiration rate of sixteen and a chest expansion of seven and one-half inches. Men are possibly born with superior cardiac inhibitory apparatus, and besides, I believe, by their mode of life, develop it to a greater

extent than women. Their normal pulse-rate has been observed to be less than in the opposite sex, and to be especially so in advanced life. When dependent upon disease, like acceleration of the pulse, it may be reflex from deranged stomach or other organ, or may be the result of derangement of the inhibitory apparatus, brain or nerve trunk, and not always to disease of the heart itself. In some, I doubt not, it is due to an abnormal condition of both heart and inhibitory apparatus. Examples of this combination will be found where this symptom follows typhoid fever. A case occurred in the University Hospital a few months since—a young man, who convalesced slowly from this disease and presented, for a week or so, a pulse ranging from thirty-six to forty, but which gradually reached seventy-two, which was probably his normal pulse-rate. Lowering of the head below the general body level causes the pulse to beat slow, and acute congestion of the brain, active or passive, or pressure upon the brain from apoplexy or other causes, has the same effect. In jaundice it is sometimes subnormal, and occasionally in yellow fever or typhoid it will be found lower than the temperature and respiration indicate. The most frequent cause is organic disease of the heart; and this in the shape of a degeneration of the muscle, and only then, for valvular disease or disease of the coronary arteries, in themselves, are not sufficient to cause it. In trying to arrive at the exact nature of the case, bear in mind this fact, viz., that where the pulse is feeble and irregular as well as slow, the cause lies in degeneration of the cardiac muscle. If, on the other hand, it is full and strong and regular, the case is what we call "functional," and its cause is to be looked for in the brain, stomach or other organ.

The study of the pulse is of value, as we have seen, in the estimation of the febrile state; also of disease of the heart and bloodvessels, disease of the central nervous system and of the stomach and other organs which act reflexly upon the circulation. You have noticed also its relation to the condition of the general body strength. It remains to call your attention to the fact that in certain affections, pulmonary consumption, for instance, the pulse becomes inordinately rapid before we are able to detect any physical signs whatever. Sufficient, certainly, has been said to impress you with the great importance of the pulse in the study of medicine.

A few words as to the method of taking the pulse. As has been already implied, we select the radial artery at the wrist, and by means of a watch, with a seconds dial, count the number of its pulsations during a quarter or half minute, and therefrom calculate the rate per minute. When the pulse is very rapid, or both rapid and irregular in rhythm; or when, for any reason, a very accurate observation is to be made, it is best to continue the count one, two or three minutes. It may seem trivial to speak of these matters, yet I assure you that it often will take considerable skill and tact to secure the pulse. For instance, in some it will be found necessary to take it at the beginning of your visit because of the quickening consequent upon the excitement caused by your presence or whatever questioning or physical examination the case may require; while, on the other hand, you will frequently find persons in whom the excitement is very early, but momentary, and in whom a reliable pulse can

only be secured some time after you have been in their presence. Some people are extremely nervous over the examination of their pulse, so much so, indeed, that you will have to take it from the temporal, carotid or other artery under other pretense than the counting of their pulse. This latter class contains many of those who apply for insurance, etc., in which a rigid physical examination is required, and they are aware of the fact that the pulse-rate alone may be quite sufficient to reject them. In little children and the most excitable of adults, it is best taken when they are asleep.

If the rate seems too high, always inquire if, immediately before your visit, the patient had any excitement, as from a fit of coughing, a movement of the bowels, etc. If they have, then you should place no confidence in the count, unless you have confirmed it by an observation of the temperature.

Always it will be found that the lowest pulse-rate we can get is the truest index of the amount of fever.

Before the use of thermometry in disease, the changes in the vascular system were especially relied upon in the study of fever; and, while they have been superseded by temperature observations, they still yield so much valuable information that the pulse has a strong hold upon second place. There is, as we have seen, a very constant relation between the rising body temperature and the rising pulse-rate. As a rule, we say they are high or low, rise or fall together. To this rule we find frequent exceptions. For instance, occasionally in some febrile diseases the pulse may be quite normal in rate, while the temperature runs high. In incipient phthisis we have often a constantly elevated pulse-rate, with scarcely any change in general body temperature.

In the last stage of tubercular meningitis, the pulse is quite rapid when the temperature is but little above normal. Often in the beginning of a typhoid fever the pulse is scarcely at all elevated at a time when the fever is very high, while late in the disease, when the temperature has descended almost to the normal line, we find the pulse rapid and running. In scarlet fever one of the earliest and most valuable signs is the marked rapidity of the pulse, as compared with the temperature and respiration. Given a case of acute fever in the person of a child, who has had none of the eruptive fevers, but in whom the decided want of harmony between the very rapid pulse and the temperature and respiration exists, we are quite safe in fearing that the case is one of scarlatina.

In tubercular meningitis, the variations in the pulse-rate and its relations to the general body temperature are of much value in the diagnosis and description of the disease. By some writers it is divided into three stages, according to the condition of the pulse: the first, that in which the pulse is rapid and regular; the second, that in which it is slow and irregular; and the third, in which it is rapid and running.

We are not generally conscious of the beating of our hearts, but when its pulsations become inordinately forcible they make themselves felt, and often yield a sensation which becomes a troublesome and distressing symptom. Our patients, who are the subjects of this annoyance, come to us saying that they have "the palpitation." We soon learn that, to them, this expression means any disturbance of the heart's action which they are conscious of. Not infrequently there will be but a momentary intermission in the heart's beat, and this is

accepted by our patients, and also by careless or poorly informed physicians, as palpitation; while palpitation, in its proper sense, means increased force or frequency, or both, of the contractions of the heart. There may be intermittency or irregularity in the rhythm, force or volume, but they are not necessary elements. Any one of you who has run himself out of breath, has experienced palpitation in his own person. In such a case, which, I think, is a true example of palpitation, the heart's contractions are tumultuous and rapid, but regular. Note, then, that there can be great palpitation without irregularity of rhythm in the cardiac action. The increased beating is, in addition to being felt by the subject, occasionally also heard both by himself and by others. There occur many cases, though, in which the heart throbs without the patient being in any way aware of it; but these, I believe, are almost always cases of organic disease of the heart. So frequently is the truth of this statement confirmed that it should become a working rule that where palpitation annoys, it is due to disturbed function and not to organic disease of the heart.

By irregularity of the pulse we mean a variation in its rhythm, force or frequency. For instance, there will occur a few slow, followed by a few rapid, or a few rapid feeble followed by a few slow, venous, strong beats. Not rarely the irregularity consists in the dropping of one or more beats, followed by one or more strong ones, as if to make up for the loss.

Where the irregularity of pulse is due to the dropping of some of its beats we are said to have an intermittent pulse. All irregular pulses, it must be borne in mind, are not intermittent, but an intermittent one is always irregular. Intermittency of the pulse, like palpitation, may or may not be perceived by our patient, and like it conforms to this rule, viz., where it annoys, it is most usually functional in nature. The annoyance in these cases manifests itself in the form of a disagreeable fluttering sensation in the chest. An intermittent pulse is an index of a corresponding intermittence in the heart's beats; but not always, for the force of the heart may become so weakened that it will require two or more of its contractions to make a single pulse wave at the wrist. Because of this fact, it is well, in all cases of intermittent pulse, and especially where its force is much lessened, to make a counter-examinatiou of the heart.

These deviations from the natural action of the heart alarm people very much and imbue them with the belief that they have some serious disease of that organ. Few medical students complete their course of study without admitting into their minds the fear that they are the subjects of heart disease; an apprehension engendered by attacks of palpitation and irregularity, due, generally, to a combination of mental anxiety concerning examinations and indigestion following boarding-house fare.

There is no doubt but that palpitation and irregularity belong both to organic and to functional cardiac disease; yet, I repeat that those cases in which they annoy, they are, almost without exception, purely functional. Under "functional" we include all those cases not due to organic heart disease. To this class, then, belong those cases which are entirely reflex, coming from a disordered condition of the stomach or some more distant organ. The proof of this lies in the fact that if we rectify the disorder in these organs the palpita-

tion or irregularity ceases. Most typical of the reflex class, of course, is that dependent upon the stomach. The knowledge of this fact is of much importance; its value is twofold: it relieves the mind of the apprehension that heart disease exists, and gives us besides a clue to the condition of the stomach, no other evidence of which may be noticed either by patient or physician. Bear in mind always this close and frequent connection between stomach disease and palpitation, but not to the exclusion of the fact that organic disease of the heart may also be present, for they not infrequently coexist, and then the gastric derangement is usually secondary to that of the heart. You will notice that these cases are much relieved by eructations of gas. The explanation of this lies in the fact that the diaphragm has been pushed up beyond its normal position by the distended stomach. In view of all that has been said, if palpitation occurs only occasionally and the rhythm of the heart's action is regular in the intervals, and no organic disease of the heart can be detected by physical examination, we conclude that it is reflex from a disordered stomach.

Palpitation may be purely nervous. Under this heading we wish to place those cases which are not due to demonstrable organic disease of the heart and are not plainly reflex. Causes of this class are such conditions as anæmia, hysteria and various intoxications, uræmia, etc.

It will be of use to you to note that when palpitation is of functional origin it is apt to come on while the patient is at rest; while if it be due to organic disease of the heart it is mitigated or dispelled by repose. Occasionally it is hard to apply this rule to cases occurring at night-time, for the nervous dream much, and those with organic heart disease frequently have its action most disturbed by the recumbent position.

In that class of cases which has been characterized by the term "nervous" in contradistinction to the remainder of the functional cases which come under the head of "reflex," we usually find several other symptoms present which enable us to separate the cases due to anæmia alone from those of an hysterical or toxic origin, or *vice versa*. If due to anæmia, one or more of these symptoms will be present: general pallor, ringing in the ears, vertigo, motes before the eyes, œdema of ankles and a peculiar murmur heard over base of the heart. It has been said that functional palpitation is apt to come on during repose. In cases of anæmic palpitation we find an exception; for, as in organic cases, it is brought on and intensified generally by exertion. The cardiac murmur peculiar to anæmia is generally described as a "hæmic" or blood murmur. It is characterized by being soft and blowing in nature; is heard best at the junction of the third left costal cartilage with the sternum ("pulmonary area"); is usually single and then systolic in time, and is transmitted up into the carotids.

Intermittency of the pulse, as you have observed, is a peculiar form of irregularity. Like palpitation, it may be organic or functional; and the functional cases are divided again into reflex and nervous. For instance, it occurs when there is a degenerating heart muscle; is reflex from a disordered stomach; and is purely nervous, as in cases of great smokers or men with overworked brains. It is connected, both in health and disease, with feebleness and slowness of the pulse, so that a slow and, at the same time, feeble pulse may be expected to intermit under the action of any depressing agent, as, for instance,

a purgative or an emetic. This fact is most valuable, because there is another set of cases in which the pulse is apt to intermit; for example, congestion of the brain, with present or impending inflammation. In these cases, though, it will be noticed that the pulse, while it is slow, is full, strong and bounding; not feeble. Here venesection would dispel the intermittency and possibly save the patient's life, while in the former cases it would precipitate the intermittency if not present, and, most probably, increase the existing depression beyond the possibility of relief. The position of our patient in bed may help us to determine whether the case is functional or organic in nature. If he lies upon his left side and feels as well as or better than he does when upon his right, the case is very probably functional; or the reverse true, it is probably organic.

One other important fact in reference to intermittency of the pulse is that it is occasionally so from infancy throughout a long life, with never any other explanation than that it is congenital. In the few cases of this kind that have come under my notice I have observed that they have been regularly intermittent. By "regularly" I mean that a certain set number of beats occurred between the intermissions, so that, for example, it would be said that every fifth or sixth or seventh beat was dropped, as the case might be. Regard this fact as valuable, for an intermittent pulse of any other origin is almost always, possibly always, irregularly intermittent and, besides, is often of evil significance.

Much of a practical nature remains to be said in reference to the force and fulness, the largeness and the smallness of the pulse; also of the "quick" in contradistinction to the "rapid" pulse, and as to many other peculiar but valuable deviations from the normal, which have not been mentioned. These, with a full consideration of the venous pulse, will form the subjects of our next discourse.

A CASE OF PERSISTENT HYALOID ARTERY—VITREOUS OPACITY, CORNEAL WOUNDS—THE THREE FORMS OF SYPHILITIC OCULAR TROUBLE, NEURO-RETINITIS, ATROPHIC RETINO-CHOROIDITIS, DOUBLE OPTIC NEURITIS OR CHOKED DISK; KERATO-IRITIS.

By Dr. Samuel D. Risley,

Professor of Ophthalmology, Philadelphia Polyclinic and College for Graduates in Medicine.

A Clinical Lecture Delivered at the Wills Eye Hospital.

[Reported by Dr. John T. Carpenter, Jr., Clinical Assistant.]

It is my purpose to study carefully with you an unusually interesting and instructive series of cases presenting typical ophthalmoscopic pictures of important and serious forms of eye disease.

I will first call your attention, however, to a somewhat unusual and always interesting *anomaly*—a case of persistent hyaloid artery.

As is well known, the nourishment of the crystalline lens is carried on, in fœtal life, by means of the hyaloid artery, which traverses the vitreous from the optic nerve to the lens in a canal lined by hyaloid membrane. As a rule, this hyaloid artery disappears after birth, leaving the lens dependent for its nourishment upon the surrounding vitreous and aqueous humors; but in some few cases an anomalous condition exists in which the artery persists either entire or floating more or less loosely in the vitreous body.

In the present instance our patient comes complaining of ordinary symptoms of asthenopia, which have proved to be due to a hypermetropic astigmatism, and only notices the presence of this anomaly by observing a moving black object before her left eye as the loose artery floats now and again into the line of direct vision. Her sharpness of vision is lowered in this eye to $\frac{6}{24}$.

While this condition of persistent hyaloid artery is not amenable to therapeutic measures, it affords me a good opportunity to make you familiar with a condition which might puzzle you had you never before noted the characteristic appearances of this anomaly. You will notice that in examining by the direct method the proximal end of the artery is seen at the inner side of the disk, and that by exerting your own accommodation it can be seen projecting into the vitreous. By adding stronger convex lenses behind the ophthalmoscope you can follow its course until the free end of the vessel lies at the focal point of the high convex lens in the instrument, added to the dioptric system of the eye. In our case it extends downward, inward and well forward into the vitreous, where its free end floats to and fro with every movement of the ball.

Our second case is that of a printer, aged 26, who came here two days ago because of sudden loss of sight in his left eye. A few days before his first visit he affirms that vision became suddenly clouded, and objects appeared of red tint and very indistinct. There was no pain or other ocular symptom. On examination the vitreous was found to contain a large red clot, and no clear view of the fundus could be obtained. The urine was examined and contained albumen. Its specific gravity was 1012.

The interesting condition existing to-day is that since the last examination the vitreous has cleared, and the fundus can now be carefully studied, although a dense vitreous opacity floats upward as the patient moves his eye. The freedom with which this mass moves about suggests a very fluid condition of the vitreous body, and, therefore, probably long-standing inflammation of the inner tunics of the eye. This is, indeed, verified by the ophthalmoscope, since the entire eye-ground shows marked evidence of long-standing eye-strain. There is the typical "ripe-peach choroid," and everywhere absorption of pigment has progressed until the choroidal vessels are exposed. At the outer edge of the disk the choroid is encroached upon by successive stages of the pathological process, as shown in the "ridgey" crescent embracing the temporal margin. He states that every prolonged attempt at near work has brought on an inflammatory attack, as shown by red, watery eyes and increased and altered secretions. At the macula a most interesting condition is found. You here note a

patch of retino-choroidal atrophy, showing the white sclera and edged by pigment heaping. This is probably the remains of a former hemorrhage. Below and to the temporal side of the disk is a recent hemorrhage, crescentic in shape, extending partly around the macula. Note the smooth, heavy appearance of the clot, and you at once know it is not in the nerve fibre layer of the retina, in which situation hemorrhages are striated and follow the direction of the nerve fibres radiating from the disk. This blood lies either more deeply in the retina or else between the retina and vitreous body. Observe how a large retinal vessel is obscured by the tract of the hemorrhage, and its location is thus proved to be in front of the retinal vessels. Hemorrhages so situated require a much longer space of time for their absorption than is the case when they occur nearer the choroid.

There is also present, uncorrected, a high refraction error—hypermetropic astigmatism—the strain to overcome which is sufficient to account for the chronic inflammatory processes seen in the retino-choroidal tract, and which stand in a measure responsible for this final disaster, since they prepared the way for the ready occurrence of hemorrhage. Especially is this the case when we consider the exacting nature of his occupation, that of a printer, which taxes most severely even a healthy eye. With all this, recall the vascular degeneration existing in renal disease, and the cause of the present trouble need not be a difficult problem to solve.

We shall order him to wear the accurate correction of his refraction error, give him careful direction as to his mode of life—warning him against exposure to cold, imprudence in diet and the like—and prescribe an alterative mixture of bichloride of mercury, tr. ferri chlor., and acid hydrochlor. dil.[1]

Case third is one of peculiar interest, and is that of a man, 24 years old, who was struck, an hour before coming to the hospital, by a chip of steel, which penetrated the left cornea slightly below and to nasal side of the corneal pole.

When seen by the house surgeon, Dr. Zimmerman, with undilated pupil, there was an insignificant corneal wound, but posterior to and in the track of this wound could be detected a suspicious puckering of the iris. The possibility of a foreign body remaining in the eye presenting itself, cocaine was instilled, and he was kept at the hospital under observation.

You will now notice the changes which have taken place in five hours. The eye is red and painful; there is profuse lachrymation on exposure to light; the pink zone of pericorneal injection indicates the serious nature of the injury. The corneal wound is clearly seen by oblique light, and in its track you now see, with dilated pupil, the ruptured anterior capsule of the lens; and in the upper and inner quadrant of the lens substance is a lance-shaped piece of steel, which appears to be about three mm. in length and one mm. in width. This is partly obscured by the swollen and opalescent lens substance in its vicinity.

[1] It is interesting to note that the vitreous opacity cleared up, and while the eye was under observation two bright-red hemorrhages occurred on the retina, and were followed up to the present time. The hemorrhages between retina and vitreous still remain and are not perceptibly diminished. An examination of the urine a month after his first visit shows no albumin. Specific gravity is 1020.

The rent in the capsule has allowed the entrance of aqueous humor, and lenticular opacity and swelling have followed. You will notice that the rapid swelling has pushed forward the iris near the seat of the foreign body, and from the severity of the symptoms thus early in the case you can see that treatment must be prompt and efficient.

There are a number of dangers in such wounds. First and most to be dreaded is sympathetic trouble, so prone to follow the presence of foreign bodies within the eye. Iritis, inflammation of the uveal tract, traumatic cataract with possible suppurative panophthalmitis, all present themselves as possible results of such accidents. In connection with treatment, too, the dangers of any attempt to remove the foreign body, either by a magnet or together with the lens in its capsule, must be carefully weighed before deciding what course of treatment to pursue. Lastly, there is a chance of the foreign body becoming encapsuled and remaining *in situ* and harmless, except for the lenticular opacity. I remember the case of a gentleman who sought advice six weeks after a similar injury had been received. The eye was then quiet, and by oblique light I discovered a minute scar through the layers of the cornea, a puckered wound in the iris, and behind this, an opaque area in the crystalline lens, dense and strongly reflecting in the centre, but fading toward the periphery. For many months I followed this case and no trouble developed, the encapsulated body remaining entirely innocuous in its position. The possibility of a like result in this case renders it inadvisable, to my mind, to attempt either the removal of the foreign body or the lens in its capsule. But it is obviously necessary that something must be done at once to ward off the impending dangers from the rapidly swelling lens and threatening secondary glaucoma, or from iritis caused by pressure upon this highly vascular membrane, the iris. After a consultation with my colleagues, Drs. Norris and Harlan, it has been decided to perform a broad iridectomy upward, over the region of the rent in the anterior capsule of the lens, in order to relieve tension and avert, if possible, further trouble from that source. I shall now ask you to witness the operation. [1]

We now come to a group of three cases which illustrate the various ways in which the syphilitic poison may affect the eyes. First in this group let us consider this case of neuro-retinitis of specific origin in which the present attack of plastic iritis developed while under observation. Our patient, a man, aged 42, admits that in last January he had chancre and bubo. He now presents mucous patches in the mouth, and on his forehead you see the typical copper-colored syphilitic eruption. He came three days ago complaining of dimness of vision, and on examination with the ophthalmoscope, a well-developed case of neuro-retinitis was discovered. The edges of the nerve were hidden and so swollen that the vessels coursing over the edge of the disk were seen with +3D. Throughout the entire fundus there was a hazy veil covering the normal retinal stippling. The media were transparent. To-day you see him with a marked attack of iritis, developed since his last visit. He tells us that

[1] The case has progressed favorably. No signs of pain nor symptoms of sympathetic irritation, but the lens is being slowly absorbed.

last night the eye previously free from suffering was attacked with severe neuralgic pain, so severe that sleep was impossible. The ball is intensely red, and conjunctival vessels engorged with blood. There is marked pericorneal hyperæmia. The iris was of a dirty greenish color, and fixed to the anterior capsule by plastic adhesions; but now you will note, on partial dilatation by atropine, numerous strong and unyielding synechiæ. This, gentlemen, is one of the instances—and they are not few—in which disease of the iris is but part of a general trouble throughout the entire uveal tract. This affection, you remember, began in the choroid and retina, and we have had the opportunity of studying the subsequent development of iritis. It is because of the participation of the deep-seated ocular structures that iritis so uniformly is ushered in with lowered vision. I have ordered mercury and potassium iodide internally. Atropine, boric wash, leeching and hot water and other sedative measures make up his present treatment.

Our second case in this group of syphilitic diseases is one of atrophic retino-choroiditis at the macula, which has caused such destruction to the delicate nerve elements of the retina as to produce a positive scotoma, which appears to our patient as a round black spot always in front of her. If you will examine the fundus in this case you will find that over a large area, several times that of the disk in extent, there have been marked degenerative changes in retina and choroid, accompanied by radiating hemorrhages. I would call your attention to the fact that beneath the darker hemorrhages are spots of atrophy, evidently caused by former hemorrhages. Our patient presents syphilitic history and now suffers from secondary symptoms. She is taking increasing doses of potassium iodide. The atrophic process is seen only in the right eye, the vision of which is $\frac{6}{36}$. The left eye shows normal visual acuity and is emmetropic in refraction.

The last case of this group presents a striking illustration of the immense advantage of an ophthalmoscopic examination in clearing up a doubtful diagnosis. The case is one of double optic neuritis or choked disk, with motor disturbance and epileptiform seizures, occurring in a woman, aged 25 years, with evidences of the syphilitic dyscrasia. She comes to-day for the first time because of inability to read or sew, and also for advice in regard to the intense pain in the head and spells of dizziness from which she suffers. She is married and has had three children, but none lived more than a few days. There are painful nodes on her tibia. About four years ago she had her first attack of loss of consciousness and falling, which developed into epileptiform seizures; but for a year and a half these had ceased. For the last six months, however, she has suffered intense pain in her head, and at intervals of a few weeks has had attacks resembling epileptic seizures, in which she became rigid and lost consciousness. This was followed by spasmodic movements, general in distribution, during which she frequently bit her tongue.

With this history, our endeavor must be to search out the cause of so serious a group of symptoms. If you examine the left eye with the ophthalmoscope you will be at once struck with the picture. The normal optic disk is gone, and in its place a foggy swollen area, somewhat larger than that of the

normal disk, is seen, the retinal vessels are in places lost to sight, and over the edge of this swollen foggy disk the most prominent vessels lie anterior to the normal plane of the retina, and are seen with +4.5D. The veins appear tortuous and increased in size, but no hemorrhages are seen. The right eye presents a somewhat similar condition except in degree. The process has somewhat subsided in this eye, and the blurred, swollen disk begins to assume, in a measure, a more normal appearance. An examination of the field of vision shows it to be concentrically contracted, and sharpness of vision has fallen to $\frac{6}{30}$ in each eye.

What does such an ophthalmoscopic picture show? Undoubtedly a cerebral trouble; in all probability a gummatous tumor causing the cerebral symptoms and giving rise to the well-known clinical picture of "choked disk."

The case demands energetic treatment for late syphilis, and that pushed heroically. Mercurial inunction; iodide of potassium, pushed to its physiological limit, at once suggest themselves as the only chance for relieving the localized syphilitic lesion.

Lastly, let me show you this woman, aged 60, who presents an instructive case for diagnosis; and, as the details of the case are best studied in daylight, we shall leave the "dark room," and I shall hastily call attention to the salient features of the case.

You all know that glaucoma is a disease of later life; that it often begins with severe attacks of neuralgic pain over the brows and in the eyes; that the eye shows signs of congestive trouble, varying from fulness of the anterior perforating vessels to intense redness of the ball; that the cornea is steamy; that the pupil is often dilated to medium size and fails to react to light and shade; that the anterior chamber is shallow, and tension of the ball is increased.

Now, these symptoms, except the increased tension and moderately dilated pupil, are all present in this case. The pain is present; there is marked redness of the ball, uniform haze of the cornea, sluggishness of the pupillary reactions, and this at the very time of life when glaucoma is most likely to occur. Because of the corneal haze there is no opportunity to see the optic papilla, and thus to determine whether or not the characteristic cupped nerve of glaucoma is present. But one important, nay, necessary symptom is absent. On careful palpation with the tips of your index fingers, as she looks down, you will find that the intra-ocular tension is reduced. The absence of that one symptom renders a diagnosis of glaucoma out of the question. Moreover, a rough determination of the field of vision shows it to be normal.

This is a case of kerato-iritis, and note how much our treatment differs from that of glaucoma. Atropine, *contraindicated* in glaucoma, will be used to break up the attachments between iris and anterior capsule. Internally, tonic and alterative treatment will be prescribed, and the diet must be of most nutritious kind. Hot compresses and, if necessary to relieve pain, leeches will be ordered.

MEMORANDA.

ON THE TREATMENT OF VARICOCELE BY LIGATION AND EXCISION.

I RECENTLY reported three cases of varicocele that were cured by means of exposing the enlarged veins, separating them from the cord and its accompanying artery and nerve, ligating *en masse* above and below, excising the veins lying between the ligatures, and by means of the long ends of the latter bringing in apposition the cut extremities of the vessels and thus materially shortening the cord. All of these cases healed by primary intention, but one subsequently broke down, leaving a sinus, from which were discharged the silk ligatures. Since then I have operated on five more cases. In three there was primary healing; in two there was some bleeding into the dartos, a hematoma of moderate size formed; this, after two weeks, suppurated.

Even in these very few cases a certain amount of useful experience was gained; thus it was found best to make the skin incision not longer than one inch, and to place it a little below the external abdominal ring rather than low down in the scrotum. After the skin incision and exposure of the veins by dividing with scissors thin, tough, fibrous investment; no further cutting is necessary, the cord with its artery and nerve being separated by blunt dissection. Operating in this manner there was no bleeding, therefore no ligatures were required. Drainage was found unnecessary, the skin wound being brought together with the utmost accuracy by means of a closely applied continuous suture. This suture is placed with the utmost ease if the assistant keeps the skin edges apposed by grasping with the thumb and finger of each hand the skin of each extremity of the incision and making tension. There is thus raised a ridge, the crest of which represents the cut, entirely closed by this method of holding.

The bandage is a matter of prime importance. To maintain even pressure upon the testicles they should be pressed upward against the pubis. In addition to the ordinary antiseptic dressing, a large quantity of cotton should be padded in the perineum, thus elevating the whole scrotum. By means of a gauze baudage, the crossed-of-the-perineum is then applied. This bandage is started from left to right, and is carried once around the pelvis just below the iliac crests. On bringing the roller from behind forward, on the right side of the patient's body, it is carried obliquely downward and forward, across the centre of the perineum, around the back of the left thigh, across the groin of the corresponding side, upward and forward across the pubis, around and behind the pelvis to the left side of the body, downward and forward, directly across the perineum, around the back of the right thigh, forward and upward across the groin and pubis and on around the body. These turns are repeated until the

dressing is completely covered. This makes firm, even pressure and controls any tendency to oozing, which, if it is allowed to take place, is fatal to the favorable course of this operation. On the completion of the dressing, the surgeon should pass his fingers between the crossings of the bandage and the perineum to see that there is no space left here into which the testicles may slip, thus possibly exposing the wound. Any space here should be packed with antiseptic cotton. The bowels should be freely moved on the third day. On the seventh day the stitches are taken out. On the fourteenth day the patient is allowed to leave his bed, wearing a suspensory bandage well padded with cotton.

A hard nodule at the site of operation can be felt for one or two months, or even longer. This finally disappears, and certainly in the majority of cases the patient remains definitely healed. Contrary to the commonly accepted opinion, however, this is not always the case, relapses do occur, possibly because of failure to secure a sufficient number of the diseased veins, or because of the continuance of the conditions which first occasioned the disease.

A careful search through the literature of the subject, made by Dr. A. C. Wood, apparently shows no relapses after the radical cure of varicocele, performed by incision and exsection. One such case has come under my observation, though it has not found its way into general literature. Again, it is claimed that this method will positively secure against the possibility of atrophy of the testicle, since only by the most stupid blundering could the cord be included in the ligature. No cases of this complication are reported, yet I have seen one such case. The atrophy, certainly in this instance, had nothing to do with injury to the cord, since the operation was performed by a most skilful surgeon, who took every precaution against this accident. It has been abundantly shown that ligature of the cord itself is not sufficient to provoke atrophy. When it occurs it is probably due to inclusion of either the arteries or nerves in the ligature, or may possibly be caused by a ligation of the veins so complete that there is no means by which the arterial blood may escape. One such case is reported (Jacobson, "Holmes' System of Surgery," third edition, Vol. III).

Lad, double varicocele, left being of enormous size, this half of scrotum hanging three and a half inches below other side, and dilated veins extending to external abdominal ring. Veins exposed on left side under strict antiseptic precautions and removed between double ligatures. Owing to large size three bundles of veins were removed, and even then a large number appeared to have been left. Varicocele now about one-quarter its former size. During operation vas deferens and surrounding tissues carefully held from seat of operation by reliable assistant, and were not encroached upon. Case appeared to be doing very well for a week. On eighth day it became apparent that too many veins had been ligated, as the lower half of the testicle presented itself at lower portion of wound, of a dusky green tint and evidently in a condition of gangrene. A little later this was cut away, after applying a catgut ligature. When patient left, epididymis on left side was found to run into a firm mass; it represented a small portion of upper half of left testis. (This case is figured in "Mr. Bryant's Surgery," third edition, Vol. II, Fig. 385, p. 221.)

I believe that recurrences and wasting of the testicle are far more common in all operations for the radical cure of varicocele than is commonly accepted,

or than would be believed by a study of recorded cases. Where the parts to be operated on are freely exposed to the surgeon's eye, the danger of including important structures must necessarily be less than would be the case in any of the various so-called subcutaneous operations. In varicocele of long standing the walls of certain of the veins at times become so thickened that to the sense of touch it is hard to distinguish them from the vas. On inspection, however, such a mistake can hardly be made.

I have seen abscess more frequently follow the pin operation than that of incision and excision; and possibly, excepting extensive resection of the scrotum, I believe that excision is by all odds the safest and best operation which can be performed for this disorder. No record of death following excision could be found, nor does such a result seem probable.

The indications for the operation are both local and general. Any varicocele, which, in spite of careful treatment by suspensory bandage, continues to give pain, should be operated upon. This is particularly the case if sign of softening or wasting of the testicle can be detected. Moreover, even though the varicocele seems to give little local distress, if the patient has firmly fixed in his mind the idea that this condition occasions any of the polymorphus symptoms of sexual neurasthenia, such as loss of sexual power, frequent urination, pain in the back, headache, or loss of memory, an operation should be performed for his relief. By this statement it is not meant to imply that the surgeon should on his part attribute such symptoms to a slight and possibly unnoticed varicocele. On the contrary, if the patient is not inclined to consider this as a source of his ills, every other means of treatment should be exhausted before it is suggested to him that here may lie the cause of his trouble. There are a large number of people suffering from varicocele whose minds are so constantly directed to their ailment, who are so eagerly watching for symptoms, and who are in such abject fear of ultimate impotence, that for the relief of the mental condition alone operation is advisable. As an instance of how much good can be accomplished by this operation the following case is reported:

James W., aged 50, a robust blacksmith, noticed for five years swelling in his left scrotum; this gradually became worse and occasioned dull, aching pain in the corresponding testicle. For one year he lost all sexual desire or power, became melancholy, suffered from constant pain in his back, urinated frequently, complained of headache, giddiness and mental confusion, and was not able to pursue his trade. Three years ago I operated upon him. The excised veins were unusually large and numerous. The wound healed by primary intention.

I saw him once a year ago, at which time there was no recurrence. A month ago he appeared, suffering from an attack of gonorrhœa. He stated that a few weeks after operation all his former symptoms disappeared, his sexual power returned with full vigor, and he was able to resume work. Since then he has had none of his former symptoms, and attributes his present inflammatory attack to an unfortunate excess of that desire and power, the loss of which he formerly so bitterly deplored.

Two other cases I have been able to keep under observation. They have reported similar disappearance of distressing symptoms, lasting not merely a

short time after operation, but for upwards of a year. Since this method of operation is safe and fairly efficient, exposes the patient to very little danger and promises great relief, there seems no reason why it should not be very much more generally adopted than it is.

EDWARD MARTIN, A.M., M.D.,
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A CASE OF LOCOMOTOR ATAXIA SUCCESSFULLY TREATED BY SUSPENSION.

THERE seems to be a tendency in the profession, when a new therapeutic measure is introduced, to make it the fashion, and to use it in almost every disease which flesh is heir to. Thus often, because not all of these various conditions are benefited, we lose sight of the one for the relief of which the measure was originally introduced and for which it may have proved beneficial, and it falls into more or less disrepute. Such has been the case with suspension as a remedy in posterior sclerosis; for, while originally introduced for the relief of that affection, it was not very long before it was used in almost all forms of nervous disorder. Now it is scarcely used at all. On reading the papers of Mendel, Weir Mitchell, Charcot, Dujardin-Beaumetz and others of like repute, we find that, while the cases of paralysis agitans, neurasthenia, myelitis, etc., were not benefited, those of posterior sclerosis were, to more or less extent.

It is the opinion of the writer that when men, such as above mentioned, report successes with a remedy, it must possess merit, and his experience at the Dispensary for Nervous Diseases of the University Hospital confirms such opinion, in support of which he wishes to report the following case:

J. P., aged 39, married, and a member of the Philadelphia Fire Department, presented himself at the Dispensary on May 27, 1890, and gave the following history:

He had never had any illness, excepting syphilis, acquired thirteen years ago, but has suffered from exposure and a rather unusual series of accidents incurred in the line of his duties as a fireman. In 1876 was knocked from a roof to the ground by being struck in the back by a falling flagpole. In 1878 fell from a third-story window to the ground, and in January, 1885, fell through three floors, striking upon his back, and was buried in the débris for twenty minutes. The next was in June, 1889, when he sustained severe burns, in addition to a fall of about twenty feet.

It was after the fall in 1885 that he first noticed anything wrong with himself, suffering for some time after from tingling and numbness in the legs and arms, and some difficulty in walking. This improved somewhat for a time, but he has "never felt right since." About two years ago, considerable difficulty in coming down stairs quickly or in going up ladders was noticed. This kept growing worse until, at the time of his first visit, he was afraid that he

would be obliged to give up his position. He then felt as if he were walking upon cushions, and his greatest difficulty in walking was at night. Upon examination, the knee-jerks were found to be absent; sensation delayed in the legs; gait ataxic, but not markedly so; station with eyes closed very poor. There was also some loss of co-ordination in the upper extremities. There were no typical ataxic pains, but had been troubled for some time with what he termed dull rheumatic pains in the legs. Sexual power was not impaired. The eyes were, unfortunately, not examined.

Suspension, by means of the Weir Mitchell apparatus, was at once begun, being practised every other day, commencing at first with two minutes, and gradually increasing to three and a half. No disagreeable symptoms were ever experienced. Improvement was noticed in the course of a month, and continued slowly until January, when he had an apparatus put up in the house where he was stationed, and continued the suspension, employing it daily. I saw him again about a month ago, and found him in the following condition: He had gained in weight twenty-five pounds, and felt considerably stronger; station and gait were much improved, and he was able *to run at quite a fair rate of speed;* was also able to walk a chalk-line drawn upon the floor; the knee-jerks were still absent. His comrades informed me that, before commencing the treatment, they were often obliged to wait a time to enable him to get upon the apparatus when answering an alarm, but that now he was almost as quick as the best of them. It is proper to add that at first he was placed upon anti-specific treatment, but he would not take the medicine, and it was discontinued in a week's time, since which suspension has been the only treatment employed.

Other cases have been also thus treated at the Dispensary, always with some benefit; but as internal remedies were also used, there is, of course, some doubt as to which was the effective agent.

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A CASE OF CHRONIC SALIVARY FISTULA HEALED WITHOUT SURGICAL INTERFERENCE.

THE appearance of the valuable article by Professor Agnew in the July number of the UNIVERSITY MEDICAL MAGAZINE on "Fistula of the Duct of Steno," in which he refers to chronic salivary fistula as being "exceedingly difficult to cure by any of the measures ordinarily recommended," has prompted me to report the following case:

Oscar P., 5½ years of age, had an inflammatory swelling over the region of the right parotid gland and on the cheek of the same side. At the end of six weeks, suppuration having occurred, the swelling was lanced at several points. Subsidence of the inflammation

followed, but an opening which had been made over the seat of the duct of Steno refused to close because of the presence of a continuous watery discharge therefrom. Between meals there occurred only a slow dribbling, but during mastication the discharge was very profuse.

This unpleasant symptom continued until March, 1890, when I first saw the case. Surgical interference seemed to be called for, and the consent of the parents for an operation was readily obtained. The health of the boy had not been seriously impaired during the existence of the fistula, but his appetite had not been quite so good as formerly, and it was thought best to postpone the operation a little while in order to see whether a mild antimalarial and tonic treatment would not improve it somewhat. He was therefore given small doses of quinine, iron and arsenic. He had not been taking the medicines longer than a week or ten days before his health and appetite began to improve, and the fistula would at times close for a day or two. This improvement continued, and by the end of a month complete cessation of the discharge had taken place, although it had flowed uninterruptedly for ten months before. The boy has since then (May, 1890) been perfectly well, and the only remaining evidence of his former trouble is a small scar on his cheek.

The well-known unsatisfactory results which so often follow the treatment of any sort of chronic fistula is the excuse for reporting a case whose cure had invoked no surgical ability, but has only added another proof of the incomparable skilfulness of Dr. *Vis Medicatrix Naturæ*.

E. T. Shelly.

Atchison, Kansas.

CLINICAL DEPARTMENT.

PRESBYTERIAN HOSPITAL.

COINCIDENT ADMISSION OF CASES OF SIMILAR INJURIES—FRACTURE OF THE OS CALCIS—BACKWARD DISLOCATION OF THE FIRST PHALANX OF THE THUMB—COMPOUND LUXATION OF THE THUMB—REMARKABLE TENACITY OF LIFE AFTER SEVERE MULTIPLE INJURIES.

[Service of Dr. De Forest Willard.]

Apropos of an unique popular article which was published recently in one of our great daily newspapers, and in which, as the result of inquiries made at some of Philadelphia's hospitals, the coincident admission of three or more like injuries within a stated time was noted, we are prompted to contribute similar instances of accident cases that have been observed here within the past few months.

Thus, there were four cases of simple fracture of the femur, three of which were admitted to the men's surgical ward and one to the children's ward within ten days; in one of the adult cases an hæmatoma of large size occupied

the middle of the thigh, about the seat of fracture, causing a bulging externally of discolored skin, nearly the circumference and fully the depth of a soup-plate. While crepitus was easily elicited in the other cases, in the last-named this was not felt or heard, probably on account of the effusion of blood between the ends of the fragments. However, the marked displacement and mobility which were present sufficed to establish the diagnosis.

Again, within ten days there were admitted four cases of fracture of the leg; three of these were simple fractures of both bones, one of which was associated with fracture of the sternum at its middle, while the fourth was a simple fracture of the fibula about three inches above its malleolus, with a transverse fracture of the inner malleolus (Pott's fracture).

Three cases of combined fracture and dislocation of the elbow were admitted, also, within two weeks. One of these will be detailed further on. The second case was a compound dislocation backward and outward of the ulna, with fracture of the coronoid process. A third case was a man who had fallen from a bridge a distance of twenty feet, upon railroad tracks, striking his left arm and body. On admission into the hospital, an anterior luxation of the head of the left radius, with simple fracture, transversely, of both olecranon and neck of ulna, was observed. The tissues surrounding the injured elbow-joint were deeply and severely contused.

Among minor accident cases we have noted the frequent runs of three or more scalp wounds within as many hours, or two and three dog-bite wounds, or punctured wounds with pieces of needles in the flesh, crushed fingers, etc., in one day.

Taking up the subject of exceptional accidents, we saw in an old man, who had jumped from a wagon and alighted solidly upon a large stone, a distinct case of fracture of the os calcis. Crepitus was elicited by grasping the point of the heel in one hand, while with the other the injured foot was alternately flexed and extended, with a lateral movement exerted at the same time.

In the children's ward a case of backward luxation of the first phalanx of the right thumb was treated recently. Reduction was effected easily, the head of the metacarpal bone evidently not having slipped between the heads of the flexor brevis pollicis.

Again, in the adult receiving ward, about six weeks ago, a rather rare case of compound luxation of the thumb entered, and may be worthy of note, as follows:

J. S., aged 20, while playing baseball, was struck on the end of the right thumb so that the distal phalanx was forced backward over the distal end of the proximal phalanx, which latter protruded through a small wound on the flexor surface of the thumb. Reduction was effected under strict antiseptic precautions, and the wound closed with two silk sutures. The case was then referred to the out-patient department, and, six weeks after the accident, fair motion in the joint remains, no untoward results having followed.

MULTIPLE INJURIES.—The following case showed remarkable tenacity of life in a workman following severe multiple injuries received while at work on the new Walnut Street bridge which is to span the Schuylkill River:

A. McV., aged 31, fell a distance of thirty-five feet upon a pile of heavy bridge iron, and, on admission into the hospital, there was observed a simple fracture of the left femur, at its middle, with marked displacement of the fragments; a compound fracture of the head of the left radius, coronoid process of the ulna and internal condyle of the humerus, with backward dislocation of the ulna through a lacerated wound of the soft tissues adjacent to the fractured internal condyle; stellate, lacerated and contused wound of the left forehead; no evidence of cranial fracture; symptoms of severe concussion of brain and bodily organs; contusions of both eyes, with marked right exophthalmos, probably due to a post-bulbar hemorrhage. There was hemorrhage also from both nostrils, hæmoptysis and hæmaturia. Moderate amount of shock, soon followed by muttering delirium, and violent, general muscular movements supervened. Patient also had gonorrhœal discharge from penile meatus.

Dr. Willard performed a partial, primary excision of elbow-joint by removing the fragments of the radial head, internal condyle of humerus and coronoid process. An external counter opening was made and drainage tubes inserted; aristol gauze dressings and anterior right-angled splint applied, as this position seemed to keep the elbow most fixed and symmetrical at the same time. The fractured femur was treated by the use of extension and sand-bags. Cerebral irritation became more manifest in about thirty-six hours afterward; temperature hovered about 102°; pulse small, rapid, but not compressible; respiration, at first deep and noisy, became shallow, frequent and jerky. Patient kept on in this condition, semi-comatose and restless in turns, until the eighth day, when he sank rapidly and died. Temperature 106° just before death. No autopsy obtained.

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GERMAN HOSPITAL.

A SUCCESSFUL CASE OF OPERATIVE INTERFERENCE FOR ACUTE GENERAL PERITONITIS.

[Service of Dr. JOHN B. DEAVER.]

Mrs. B., aged 52, admitted June 24, with following history: Ailing since June 12; received a sudden jolt while riding in a street car three days before admission; shortly afterward became nauseated, and on arriving home began to vomit; patient then noticed a tumor in right iliac region which disappeared in three hours, before seen by a physician. When first seen by a physician there was intense pain diffused over abdomen and persistent vomiting; temperature 101°, pulse 112. The following day there were unmistakable signs of peritonitis. The patient grew rapidly worse, and on admission was suffering excruciating abdominal pain, resenting the pressure of the lightest bedclothes. There was marked distension of the abdomen, some tympanites, the bowels had not moved for six days and there was persistent vomiting of greenish fluid and mucus; temperature 100°, pulse 120, respiration 34.

Three hours after admission the abdomen was opened; the peritoneal cavity contained a considerable amount of liquid exudate; the intestines were acutely inflamed and covered with a large amount of plastic effusion. After thoroughly flushing out the peritoneal cavity with several gallons of warm distilled water and inserting a glass drainage tube, the wound was closed.

For a few hours following the operation the patient suffered from nausea, and vomited the same greenish liquid as before. Very little fluid was obtained from the drainage tube. The next morning the patient was almost entirely

free from pain, and during her convalescence required no more medicine than one-sixth of a grain of morphine the night after the operation, and enough calomel, two days afterward, to move her bowels. The highest temperature recorded was 100.8°, on the evening of June 25.

Contrary to advice, the patient insisted upon going to her home ten days after the operation, before the wound was completely healed, and has been lost sight of since then.

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PSOAS ABSCESS FOLLOWING TRAUMATISM; TREATMENT BY INCISION, CURETTING AND INTRODUCTION OF DRAINAGE FROM LUMBAR REGION TO LOWER THIRD OF THIGH; RECOVERY.

[Service of DR. JOHN B. DEAVER.]

LARGE psoas abscess in a tuberculous subject, until quite recently, intimidated the boldest operators and discovered to them the convenience of styling inactivity "masterly." Since the advent of Listerism, good surgery has pointed theoretically, in this disease, toward interference. A strong instance of its practical value has lately been given by Dr. John B. Deaver. To his kindness and that of Dr. M. T. Prendergast I am respectively indebted for the occasion and permission to report this case.

Mrs. ——, 30 years of age. Her sister died of phthisis. There is ground for suspicion that her mother and brother died of the same disease. Till four years ago she enjoyed good health. Married at 23 years of age. In five ensuing years bore four children; the first died at 3 years of age of sarcoma of kidney; diagnosis established three weeks before death by exploratory operation; the second miscarried at five months; the remaining two children are living and well.

In May, 1887, ten months after the birth of her third child, patient received in the right lumbar region a stunning blow, its source the knob of a door slammed violently by the wind. She "experienced such severe pain that for a few moments she could not see." The immediate effects were transitory, and she soon forgot the accident. Two months later began to feel pain at site of blow. Complained only at night time. Easier decubitus on sore side, thus favoring flexion of injured parts. Attempts to rest on sound side gave sensations of "something displaced," and aggravated the pain. Also found difficulty in rising from bed, feeling sore and tired. Six months after injury pain extended from side to back. It became constant day and night, often keeping her awake and forcing her to rise and walk the floor by way of relief.

In March, 1889, patient one morning attacked by severe pain in *right thigh*, and was carried to bed, where she remained a week; and her attending physician revised a primary diagnosis of hernia to that of rheumatism; there was at this time no swelling. Upon leaving bed she found herself lame, and continued so some three weeks. Her last pregnancy now began. With its advance all pain and limp disappeared; but, four months after her delivery, they returned with even greater force.

In June, 1890, the anterior surface of her right thigh commenced to *swell*. Pain and disability soon became so extreme that she "ceased to care for life." In July went to country; tumor then as large as an apple. In September returned home; swelling had increased, back was still sore, but pain had diminished and general condition was much improved. Her physician, now diagnosing psoas abscess, suggested an operation, which so

frightened her that she never returned to him. Later she consulted several noted surgeons and finally saw Dr. Prendergast, who advised operation by Dr. Deaver.

On November 18, admitted to private room in St. Joseph's Hospital. I saw her then for the first time. Inspection revealed on anterior surface of right thigh, external to vessels, a soft, fluctuating, hemispherical tumor, with a diameter of six inches, extending from immediately below Poupart's ligament to middle of thigh. It seemed of even consistency; was flat on percussion; no bruit on auscultation; did not pulsate; neither was it red, hot or tender to the touch.

On November 19, at 11.30 A.M., the patient was put under ether, and with due antiseptic precautions the tumor was first punctured with an exploring needle that revealed pus, and then incised from top to bottom; *i. e.*, in the long axis of the limb; five pints of pus welled from the incision. The walls of the pus chamber were studded with large, villous, tuberculous granulations. These were freely curetted under a continuous stream of acid sublimate 1–2000. The cavity was packed with sponges and the patient turned on her left side, its hollow resting on a cylindrical pillow, thus bringing the right side into extreme extension. A four-inch incision was next made parallel with the last rib and three inches below it; the incision passing through skin, superficial fascia, latissimus dorsi, external oblique, posterior lamella of lumbar fascia, erector spinæ and fascia of internal oblique, middle layer of lumbar fascia, quadratus lumborum and anterior layer of lumbar fascia.

A stiff but flexible linen catheter, with long drainage tube attached to its distal extremity, was introduced between the anterior layer of the lumbar fascia and the psoas muscle, and gently pushed till its exploring end emerged in the wound in the thigh. To completely drain the bottom of the cavity a counter opening was made. The catheter was forced to the new opening and traction made till the drain was *in situ*. The wounds were closed with gut, the drain was reflushed and antiseptic dressings applied.

The shock that sometimes accompanies the opening of the large "cold abscess" was absent. The first two days following the operation were uneventful.

On coming out of ether, temperature 97.4°. Good reaction with hot bottles. Ammon. carb., gr. xxx, was given in the course of the afternoon, which was marked by considerable but decreasing lumbar pain. The maximum evening temperature of the first two days was 101.4°. The second day was one of fair comfort and terminated with sleep. Milk or concentrated broths were given every two hours.

On the third day, at 4.30 P.M., nervous chill accompanied by delirium. I was attending to the first dressing of the wound. A glass tube connected the lumbar end of the drain with a fountain syringe. The solution was hardly in full flow when the patient's face grew wild with terror and, chattering and trembling, she became delirious. The solution regurgitated from the lumbar wound, and but a few drops found their way to the femoral end of the drain. Efforts to calm the patient proving vain, I hurriedly renewed the dressings, administered one-fourth grain of morphia, hot whiskey, and surrounded her with hot bottles.

Was this merely fright in a very timid woman, or had a solution of sublimate 1–4000, carbolic 1–40, burst into the peritoneal cavity? The fluid that had "regurgitated" had drained into a vessel already containing water, preventing comparison of return with supply.

At 6 P.M. she was rational. Her temperature, from 99.6°, at noon had fallen to 99°. At midnight it was 103°, with extremities alarmingly cold and pulse too rapid and faint to be counted.

November 22, 3 A.M.—Her limbs ceaselessly restless and more icy, lips purple, features pinched, nose painfully defined, eyes sunken, sleepless, staring. She seemed to be dying. For four days hot blankets, bottles, broths and nutritious enemata; frequently repeated doses of quinine and ammonia carbonate; *a pint and a half of whiskey per day;* and yet, save slight oscillations of temperature between 103° and 103.6°, an increasing tolerance in an irritable stomach and the coming and going of delirium, there was absolutely no change. To find her still alive was perpetual surprise.

November 24.—Her temperature dropped to 101.8°.

November 25, at 3 A.M.—Her pulse could again be counted and was 132. Her feet commenced to grow warm. To a dauntless nurse and limitless stimulus this was the first response. Her condition now steadily improved. Her hands were not warm till the next day, and on that which followed she was yet wild from her ceaseless vigil and again grew delirious. Sulfonal induced calm and the first sleep in six days. Her temperature from its initial drop fell night and day and was now 99.4°.

That she had so nearly died, we now learned, was merely the effect of great terror, inspired by the supposition that the glass tube connecting the syringe with the drain was to be thrust into her side.

November 29.—Once more on solid food; stitches removed; large femoral wound healed by first intention, while the lumbar incision, not being completely united, was strapped with adhesive plaster; tube unobstructed; pus only in small quantity, and more than justified by granulating area in long drainage sinus.

December 3.—Temperature normal. Drain flushed every two days and terminal dressings applied.

December 16.—Lumbar wound has closed by granulation around the tube. Drainage tube replaced by smaller one.

Jan. 1.—Drain, being dry, removed and supplanted by a precautionary silk seton. Temperature still normal.

Jan. 13.—Went home. For past ten days has been sitting up; has commenced to walk; limps slightly.

Jan 21.—Seton removed. Sinus completely closed in a week.

May 10.—Has some sense of weakness in back, and is conscious of fatigue on lifting or carrying her children; but works a machine with left leg, runs up and down stairs and has walked ten blocks with perfect ease. She has gained in weight, and eats, looks and feels well.

This case commends itself for report, not only because it is a brilliant cure where statistics point so universally to fatality that they strongly invite cheerful modification, but also on account of its useful didactic qualities.

The prognosis was especially gloomy; three immediate relatives victims of tuberculous taint; the patient herself depleted by four rapidly succeeding labors; the abscess large and incised at a late day, thus minimizing the chances of escape from a more than expected and often deadly shock. Yet, complicated by an incident that could not have been nearer a catastrophe, the surgical history could not be a more impressive object-lesson of the truths of the gospel of cleanliness and radical drainage.

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EDITORIAL.

THE CONCLUSIONS REACHED BY THE SECOND CONGRESS FOR THE STUDY OF TUBERCULOSIS.

THE rare spectacle of the gathering of a congress which devoted itself entirely to the study and discussion of a single question was presented in Paris, July 27 to August 1, in the second meeting of the Congress for the Study of Tuberculosis.

At a time when the failure of the treatment of Koch is apparently complete, when the theories and results published by other experimenters are so numerous and so contradictory, it is good fortune which calls together in public debate many of the workers in this field of medical activity. Under such circumstances the many reports may be discussed and judged more rapidly and accurately, and the wheat sifted from the chaff. Fortunately for this purpose this congress, fostered by Verneuil and Petit, continued to have the success it received in 1888, although some authorities, notably Germain See, looked upon it simply as a huge advertisement, and consequently did not subscribe for its support nor join in its deliberations.

All the various phases of the study of tuberculosis were narrowed down to two clearly-cut questions—*pathogenesis* and *therapeutics*. By common consent contagion, heredity, emigration, pathological anatomy and semeiology, which

have been great questions in other congresses in the past, were kept in the background.

The question of *pathogenesis*, as it was presented to the congress, was concerned largely with the plurality of tuberculosis. Nocard and Roux, after four years' study of the subject, have given the forms of culture applicable to the tuberculosis of birds, which, up to that period, had been regarded as identical with mammalian tuberculosis. Koch has declared that the character of the culture of bird tuberculosis differs from that obtained in guinea pigs inoculated with the products of human tuberculosis. Rivolta and Mafucci, Italian observers, have carried out this work of differentiation still further.

In France there has been the decisive work of Straus and Gamaleia. These two observers are the most positive and most extreme in their views of the dualists, *i. e.*, those who claim the complete non-identity of these two forms of tuberculosis. According to them there is a sameness in the form and reaction to the principal aniline colors between the bacilli of the mammal and the bird; yet the appearance of the cultures, and especially their biological characteristics, serve to show their distinct characters. For example, the human bacilli does not develop at 45° C., while this temperature favors the development of the bacilli of the bird. They claim that the dog takes human tuberculosis, but not that of birds, while the hen takes bird tuberculosis, but is absolutely refractory to that of man. The rat, rabbit and guinea-pig are receptive to both bacilli, but the products produced by the experimental injections are wholly different. The human bacilli forms the tubercle; the bacilli of the bird a special form of septicæmia studied most exhaustively by Yersin.

Gilbert and Cadiot reach similar conclusions concerning the non-identity of these two forms of tuberculosis, with the reservation that there seems to be exceptional cases, in which human tuberculosis has been inoculated in gallinaceæ, *i. e.*, that species of bird which exhibits typically bird tuberculosis, and conversely that bird tuberculosis has been inoculated in mammals. Courmont and Dor, on the other hand, believe that these differences in the bacilli are not so marked. They state that Koch himself has inoculated hens with human tuberculosis. They claim to be able to produce the different forms of tuberculosis by intravenous injections, no results being obtained by other methods. Hence they conclude (1) that gallinaceæ are not wholly refractory to human tuberculosis; (2) that inoculation by the digestive tract, or the subcutaneous method, is uncertain; (3) that human tuberculosis inoculated in gallinaceæ and cultivated in a series of cases is still inoculable again in mammals.

According to these conclusions, which seem to express most accurately the opinions of the members of the congress, the bacilli of bird and human tuberculosis are not two distinct species, but rather two forms of the same species.

Chauveau, on a branch of this same subject, reported three series of inoculation of human tuberculosis in cattle, in the course of which he shows that human and bovine tuberculosis are identical.

In this discussion of the plurality or unity of these two forms of tuberculosis, the point of interest in practical medicine lies in the question—Are the

therapeutic and prophylactic conclusions which may be found useful in one form of tuberculosis of service in the other? If they are, then the degree of relationship between the two bacilli becomes a matter of indifference to the practical physician. If these measures are not of service in both forms, then this fact will invalidate the experiments of the authorities who claim the unity of the two bacilli.

Grancher and Martin, in the study of the causes of the lack of success of Koch's tuberculin, reported experimental vaccination with cultures weakened by age. These cultures are less violent, but are still active. A prolonged observation from experiments on rabbits, leads to the conclusion that it is possible to confer immunity from tuberculosis by this method. The tubercular virus seems to contain two principles, a vaccinal and a toxic substance. The latter causes the mischief noticed. From their work they believe that tubercular virus protects against tubercular virus and that anti-tubercular vaccination does exist, although as yet it is imperfect.

Taking up the second great question of this congress, that of *therapeutics*, the material is singularly rich.

First and foremost was the report of the study of Koch's tuberculin. Arloing, in a very thorough paper, taking up first the *diagnostic value* of this substance, showed that certain tubercular animals presented no reaction to the lymph, while other animals, perfectly healthy, showed considerable reaction. In regard to its *curative power*, he found that it never arrested or retarded the tubercular process; on the other hand that it frequently hastened it. As to its *preventive action*, he found that healthy animals resisted better the action of tuberculosis than other healthy animals which had been fortified with injections of tuberculin.

This paper of Arloing was received with great applause; it represented undoubtedly the feeling and experiences of the members of the congress. The national prejudice to anything German which must be felt by any congress held in Paris painted the results of Koch's treatment in darker colors, possibly, than it deserves; especially as the members were aware of the all-potent power of the German Emperor, whose influence in every field of German activity is not appreciated in this country. It was this power which forced the unfortunate Koch to divulge his plan of treatment prematurely.

The Emperor wanted the glory of a scientific Sedan. It was disaster.

Of the other forms of treatment it can be truthfully said that the later the theory and the shorter the time for clinical experience the more hopeful and brilliant were the results.

Redard reported the remote results of the injection of iodoform, dissolved in oil, in cold abscesses. He cleansed first the cavity with naphthol and water; in this way the unpleasant effects of iodoform were avoided. The results have been very good in closed cavities, less favorable in cavities with fistulas or open spaces.

Hericourt reported the results of the injections of the serum of the dog in human tuberculosis. These experiments were begun on animals in 1888; they were tried on man in 1890. He divides his observations into two groups; in

the first, twenty-five cases of tuberculosis in the third stage, the results were perfectly *nil*; in the second series of patients in the second stage, dyspepsia was diminished, the appetite improved and the vomiting checked, but the bacilli persisted in the sputum. Bernheim reported the transfusion of the blood of the goat. The results were negative. Semmola has tried the combination of iodoform by the mouth and the injection of dog serum. He is at present unable to present a single case of genuine cure, although he feels encouraged to continue.

The treatment by compressed air charged with medications, preferably creosote, was discussed, although See, their advocate, was not present. No cases of cure are reported. The injection under the skin of large doses of creosote and oil was mentioned, but not recommended.

The use of chloroformized water, salts of lead, especially the acetate, inhalations of osmic acid, camphorated injections of olive oil, antiseptic injections of guiacol, eucalyptol, arseniate of strychnia, iodoformized guiacol were also discussed. No definite results could be claimed for any of these methods.

Undoubtedly, the form of treatment which attracted the most attention was the surgical injections of Lannelongue.[1] It is simplicity itself; simply the injection subcutaneously of a solution of the chloride of zinc. Lannelongue exhibited to the congress, at the Hospital Trousseau, thirty children treated by this method; most of them were suffering from tubercular joint trouble. In those cases which had received nine or ten injections, and had been under observation for three months, it was easy to see great improvement. There was the diminution of the volume of the swelling, the formation of new tissue and the return of articular motion.

The present congress was not marked by any great discovery; but on the other hand it has been very rich in experimental facts, very full of the details of laboratory and clinical experience, which may be pregnant with conclusions of the most widespread importance.

Undoubtedly the present trend of the day is to make use of the methods which nature employs against tubercular processes. The therapeutics of the future seems to be taking that form—the production artificially of nature's methods of prevention and elimination.

BOOK NOTICES.

PRACTICAL POINTS IN THE MANAGEMENT OF THE DISEASES OF CHILDREN. By I. N. LOVE, Professor of Diseases of Children, Clinical Medicine and Hygiene, Marion-Sims College of Medicine, St. Louis; Consulting Physician to City Hospital, etc. George S. Davis, 1891. Pp. 141.

While approving of a great many of Dr. Love's suggestions, as the use of sodium benzoate in inflammations of the pharynx, as originally applied by Salkowski in 1879, the treatment of epistaxis by means of the condom, and

[1] See Surgical Progress, page 798.

the use of hydrogen peroxide in diphtheria, we cannot always recommend that the minute the infant is born he should be medicated with calomel, sodium carbonate and sugar of milk.

The title on the inside page is not the same as that on the outside, for here we have the word "some" introduced. We do not understand why an index covering twelve pages should be placed at the beginning of a work like this rather than at the end. A great many persons will differ from the author when he says that "it is easier to make a diagnosis in a child than in an adult." The reason why pediatrics has been so unpopular with a great many members of the profession is from the fact that they consider the treatment of children as rather belonging to the department of veterinary medicine.

A family prescription for bronchitis is given, which is composed one-fifth of whiskey, and is given in doses of one drachm to half an ounce every one, two or three hours, p. r. n. This remedy is supposed to be in the hands of every anxious mother, and given to the child at the least signs of commencing bronchitis. It hardly seems to us wise that the children should so early learn to use and to depend upon such a large amount of alcohol for the cure of such a common disease as bronchitis. We do not refer with pleasure to statements of the following kind: "Rattles us," "knocks us out," "giving pointers," "during the past twelve years I have been fortunate in having a practice among the very best element of a large city," etc.

It is just as well for the medical profession at large that there are but few publishers pouring out into the world books of this sort, which are but to be read for the moment and laid down, never to be taken up again. It is like the novel of the season, which is published in order that it may sell and pass away a few hours of leisure, not in order that the world may be benefited by the time, labor and money which have been spent upon its preparation.

VIERORDT'S MEDICAL DIAGNOSIS. Translated by F. H. Stuart. Philadelphia: W. B. Saunders, 1891.

Rarely is a book published with which a reviewer can find so little fault as with the volume before us. All of the chapters are full, and leave little to be desired by the reader. Each particular item in the consideration of an organ or apparatus which is necessary to determine a diagnosis of any disease of that organ is mentioned; nothing seems forgotten.

The introduction to this volume, unlike that in many others, will not bear being skipped. Among the many good things said in this short part of the work is the advice to the physician to avoid accepting the patients' estimate of previous diseases. If we accept their view and names applied, we will frequently be misled; nor is the advice to ask the patient what the physician called the disease much improvement, for patients seem especially prone to twist the name given by a physician to all sorts of ridiculous shapes. Much better is it for the interlocutor to get the symptoms of the disease from which they have suffered, and judge for themselves of the nature of the disease.

A good point made in the general examination is to avoid being misled by injected conjunctivæ, for many persons who are intensely anæmic, have at intervals, injected conjunctivæ. The chapter on examination of the respiratory apparatus is particularly good, though its clearness is somewhat interfered with by the mistakes of the translator, as will be explained subsequently. The reviewer notices that this author follows the usual writers on the subject in not calling attention to the differences in the percussion-rate at the right and left apex. He does call attention, however, to the fact that posteriorly the right apex has a normally higher pitched rate than at the left apex in the same position. An unfortunate mistake is made either by the printer or translator, on

page 115, in naming the figures used to illustrate the value of strong and weak percussion, the names being evidently reversed.

The chapter on diseases of the circulatory apparatus appears to the reviewer to be especially valuable; he has rarely seen such a clear exposition of the cause and mode of recognizing endocardial murmurs.

In this chapter, however, there is a peculiar omission, clouded considerably by a very obscure paragraph, evidently due to bad translation. The paragraph follows: "Plasmodium malariæ is still doubtful, although Marchiafava and Celli are tolerably certain that they have produced malaria by infection where it did not exist. They are protoplasmic bodies within the red corpuscles, which can be stained by methylene-blue." With this obscure notice he dismisses the plasmodium. When it is taken into consideration that no fact in clinical medicine is better proved than at least the *diagnostic* value of this parasite in the blood, it is strange to see it so carelessly noted, and still more so when so many of the author's eminent countrymen, Paltauf, von Jaksch, Quincke, Rosenbach and Rossin, Dolega, Plehn and L. Pfeiffer have found the organisms in blood, and when they are accepted by Baumgarten and R. Pfeiffer, who speak for the temple at Berlin.

The chapters on digestive apparatus and nervous systems are equally as full and valuable as the former chapters and will well repay the careful reading by both physician and student. The author disposes of the amœba coli with probably less ceremony than he does of the plasmodium malariæ; here he shows neglect of the most recent researches of dysentery.

The paragraph on vertigo in the nervous system curiously omits disturbances of the circulatory system (except anæmia) as a cause for vertigo. This is a serious omission, and doubtless will be corrected in a new edition. Valuable as the book is, it is unfortunate in the first half being full of curious errors in translation. This is to be regretted, for while one fairly conversant with the subject will readily notice the mistakes, the student into whose hands it will fall might accept the errors as truths.

Space will allow notice of but a few of the most glaring mistakes. The following proper names are misspelled: Ludwig is written "Ludvig;" Weil, "Veil;" Skoda, "Scoda." These mistakes are corrected in the latter half of the work. *Daten and Tabellen* is translated Dates and Tables—certainly a curious translation for data. A most serious mistake in translation is rendering *typhus abdominalis* as typhus, without an adjective. It is, of course, understood by the experienced physician that typhoid fever is meant, but the student will certainly not so understand it. The translator uses "deadness," saying that deadness means more than dulness, and on the very next page calls an absolutely dead sound "dull." To say the least, the introduction of a new term for the designation of percussion sounds was not needed, and "deadness" is far from an improvement; indeed, the clearness of this whole chapter is spoiled with the entirely unwarranted interpolation of this term.

In another place he uses the term, "Noise of the spun top," and fails in any place to use the English "cracked-pit" sound, so familiar a term to all clinicians. The translator spoils the chapter on sputum by mystifying the names of the different stains and acids in hopeless confusion, so that it would be impossible to follow a sputum examination entirely by his directions.

Notwithstanding these errors, which are of small importance in comparison to the accuracy of the rest of the volume, the reviewer repeats that the book is one of the best, probably *the* best, which has fallen into his hands. The errors of translation will doubtless be corrected in new editions, as they seem to have been done in the latter half of the work. An excellent and comprehensive index of but little less than one hundred pages closes the volume.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND J. HOWE ADAMS, M.D.

Puncture of the Spleen in Diagnosing Typhoid Fever.

Eloy (*Revue Générale de Chirurgie et de Therapeutique*, June 17, 1891) emphasizes the importance of recognizing the conditions which favor perforation, that precautions may be taken. The conditions which favor perforation are the periods of the disease, it being more common in the third to fifth week. It is more common in males and in adults; it is favored by errors in diet and unwarranted manipulation of the abdomen. In making a prognosis, the possibility of a relapse occurring should always be stated. In doubtful cases of fever the author maintains that the diagnosis may be rendered certain by bacteriological examination of blood obtained from the spleen. A sterilized hypodermic is used, the splenic region being punctured after being first made thoroughly antiseptic. The blood is transferred to some carbolized bouillon or potato, and in from one to two days, if the typhoid bacillus is present, its characteristic growth should be seen.

This method of diagnosis is fully described and discussed in an article by Redtenbacher (*Zeitschrift für klinische Medicin*, Vol. XIX, Part IV, 1891). He punctured the spleen in fourteen cases and obtained positive results in ten cases. He believes the method to be useful in all severe febrile conditions, especially in septic or pyæmic diseases, or in acute miliary tuberculosis, and while it may be useless in a few cases, in the greater number one can in this way make a definite diagnosis.

[A fact not mentioned in either of these articles, but one most important, is that this method can be used only by those who have the proper means at hand for growing the micro-organisms from the blood. These are not usually employed by the ordinary practitioner, but by the pathologist.]

Elimination and its Uses in Preventing and Curing Disease.

T. Lauder Brunton (*Lancet*, June 20, 1891), in his inimitable style, describes the elimination of the waste products of the body by comparing it to the sewage of our great cities. He analyzes Dr. Hays' papers on gout and rheumatism, claiming that, by the use of alkalines and certain articles of food, the uric acid is dissolved in the blood, and while the patient may be more or less uncomfortable, he is possibly in a better condition than when he is made comfortable by the use of acids, and the uric acid is stored up in the joints and the spleen. He believes that the continued use of salicylic acid is the best method of eliminating uric acid from the system. He considers the free use of water as the best possible means of getting rid of all the waste products. The great usefulness of the different mineral springs, he considers, depends more upon the amount of water drank and the exercise taken than upon the nature of the water imbibed. The grape cure, he thinks, owes its efficacy to the large amount of water contained in the grapes, at the same time it being a method of partial starvation. The milk diet, he considers, owes its great diuretic power in diseases of the kidney to the same property of great amount of water contained. Elimination by means of the digestive tract, he thinks, is of the greatest importance. Exercise, by the compression

exercised upon the abdominal viscera, aids in maintaining a good condition of the bowels. When exercise, stewed fruits, gruels, etc., fail to keep the bowels regular, he advises either a Lady Webster pill daily, or small doses of aloin three times a day.

Amœba Coli in Dysentery.

In an interesting article in *Texas Medical Journal*, April, 1891, Dr. George Dock gives a *resumé* of the history of the discovery of the amœba coli, with a history of twelve cases of dysentery and abscess of the liver, in which he has found the amœba in the discharges from the bowel or pus from the abscesses. Case I, a man, with continued fever and late developing ascites, was supposed to be suffering from typhoid fever or tuberculosis before death. There was no blood in stools, no tenesmus or colic. The autopsy revealed an abscess of the right lobe of liver and a small, softened spot in left lobe. Ulcerations of cæcum were also found. Large numbers of amœbæ were found in the mucus from the colon and in the pus from the abscess; none were found in the softened spot in the left lobe. Case II, abscess of liver with dysentery, enormous numbers of amœbæ were found in pus from the liver and in mucus from the colon. Case III, a case of dysentery with amœbæ in stools. The amœbæ disappeared on improvement of the patient, but reappeared with a relapse. Case IV, a case of abscess of the liver operated upon. Many amœbæ were found in the pus. No history of diarrhœa or dysentery could be found, but at the autopsy ulceration of the mucous membrane of cæcum was found. Cases V and VII, typical cases of dysentery, with amœbæ in stools. Case VI, a man with dysentery who died of albuminuria; amœbæ were found in stools. An autopsy, one month after date, showed an abscess of liver, but the walls were necrotic, and no amœbæ could be demonstrated. Case IX, a man, died without symptoms of dysentery, but at autopsy typical dysenteric ulcers with amœbæ were found in the colon. Case VIII, a man, died before a history could be obtained. He passed bloody stools involuntarily. An autopsy revealed colitis and amœbæ. Cases X, XI and XII, amœbæ were found in the mucus and blood of the stools, where there were few other symptoms of dysentery at the time. All of these cases had two things in common, amœbæ coli and ulcerations of the colon, as proved either *post mortem* or by sloughs in the stools. Examinations are conducted by selecting bits of mucus, blood or sloughs, and pressing them gently under a cover-glass, and examining them with a moderately high power. The size of the organisms is from eighteen to twenty-five micro-millimeters. The author thinks that the organism has a certain value in the diagnosis of ulcerative diseases of the colon, and also as an indication of the efficacy of treatment. He calls attention to the fact proved by some of his cases that typical ulcerations of the colon may occur without giving rise to any of the usual symptoms of dysentery.

A case with amœbæ in the stool is reported by Cahen in the *Deutsche medizinische Wochenschrift*, July 2, 1891. This was a child with diarrhœa and a condition somewhat resembling typhoid fever. Small amœbæ were found. The author attempted to cultivate them in sterilized urine, and he also attempted to convey the disease to cats by giving a rectal injection of the affected stool. Both attempts failed. A case was reported by Nasse in the latter journal for July 9, 1891, where amœbæ were found in the pus and walls of a liver abscess, also in the ulcerations in the intestine, as well as in the gangrenous edges of the wound made in the abdominal wall before death. This case of abscess had no symptoms of dysentery, although many lesions were found in the intestine after death.

Recovery of a Case of Infective Endocarditis.

Cantley (*Lancet*, June 20, 1891) reports a case of acute endocarditis in which the pyæmic variety was diagnosed on the grounds of the irregular chills and fevers, varying heart murmurs, enlargement of the spleen, profuse sweating, anæmia and progressive emaciation.

The treatment was quinine in large doses, aconite in small doses and bichloride of mercury. The reporter does not think the treatment was of any special benefit, except, perhaps, the bichloride of mercury, but that the disease was self-limited.

Analysis of 1,008 Cases of Scarlet Fever Occurring in One Year.

Caiger (*Lancet*, June 6, 1891) gives an interesting analysis of the above number of cases of scarlet fever which occurred in the Southwestern Fever Hospital during the year 1890. The fewest number occurred in the first quarter of the year; a slight increase occurred in May and was maintained during the summer. A rapid increase occurred in September and reached its highest point in October; the number then steadily decreased until the end of the year. *Age.*—Forty-four and a half per cent. occurred between the ages of 5 and 10 years. Thirty-one per cent., between 1 and 5 years of age. After 10 years the number decreased until 40 years, after which period only two cases were admitted. *Sex.*—The numbers of the two sexes were nearly equal. *Mortality.*—The death-rate was 4.67 per cent. Under 5 years, however, the death-rate was 11.4; over 5 years, 1.44; between 5 and 10 years, 0.89.

Complications.—Otitis with purulent discharge was the most frequent complication; it occurred in 125 cases. The younger the child, the greater the liability appeared to this complication. Only one case occurred in a child over 10 years. Adenitis occurred in sixty-nine cases. By adenitis the author does not mean the glandular swelling occurring as a cause of the faucial ulceration, but a distinct affection accompanied by a new rise of temperature. The glands affected were usually at the angle of the jaw, sometimes under the sterno-mastoid. About one-third of the cases suppurated, and required surgical interference. It occurred most frequently in the second or third week after the primary fever had subsided. Rhinitis, with a more or less purulent discharge, occurred in fifty-eight cases; it was frequently associated with otorrhœa and most common in young children. He has endeavored to exclude those cases where the complication occurred in the first week, when it is a serious complication. Eczema was noted in thirty-two cases; its most frequent seat was the junction of the alæ nasi and upper lip, behind the ears and on the ear itself; it seemed in many cases to be dependent upon the irritating discharge from the nose or ear. Young children were most liable to it. Albuminuria occurred in thirty cases. He does not consider here faint clouds obtained by delicate tests, which may perhaps be due to the albuminous diet. It was most frequent in the young, and cold weather had no influence upon it. Ulcerative stomatitis occurred in twenty-seven cases, in all degrees of severity. Cases which did not at once yield to mild treatment were painted over with fuming nitric acid. He believes it to be contagious and probably due to a specific organism. It never occurred in children over 10 years. Nephritis occurred in twenty-six cases. It was most common in summer. Dropsy was not frequent. Only one case was fatal. Severe rheumatism occurred in twenty-six cases; two of the cases were accompanied with pericarditis. It was most common at the end of the first or beginning of the second week. Patients with a copious rash appeared most liable to it. Bronchitis occurred in twenty cases. Conjunctivitis, which appeared to be an affection of convalescence, occurred in thirteen cases. Secondary tonsillitis occurred in a few cases. Diphtheria did not occur and would appear to be a matter of hygiene. Little danger of its appearauce unless the case was inoculated from another.

Relapses occurred in six cases. Desquamation was ended in from six to sixteen weeks. *Treatment* was symptomatic, but little medicine being given. Bad cases of sore throat were syringed with boric acid solution, and hot poultices seemed of benefit. For restlessness, due to high fever, cold sponging was practised. Sulfonal was an efficient hypnotic. In cases of nephritis, milk was made the basis of diet, but they were allowed semi-solid food besides. All cases were confined to bed.

A Case of Cephalic Tetanus.

Williamson (*Lancet*, July 11, 1891) reports the following case: A man, aged 64 years, ran his face against a sharp stick, inflicting a superficial wound just below the lower eyelid of left side. Four days after the accident he noticed stiffness of his jaws. On the fifth day the wound was found to be very superficial and indurated; the left eye was fixed, the pupil moderately dilated, and did not react to light. Right eye movements normal, and the pupil extremely small; the jaw was tightly closed; there was no difficulty in swallowing. The muscles of the *right* side of the face were in a state of tonic contraction, while those of the

left side were totally paralyzed. Temperature in morning, 99.2°. The next day there was difficulty in swallowing, and during the paroxysms marked hardening of the abdominal muscles. The temperature rose to 100.2°, but fell to 97° before death. Careful microscopic examination of the medulla, pons, lower portion of the cuni cerebri, corpora quadrigemina, the upper third of the spinal cord and the left third nerve, gave absolutely negative results. Eight cases reported by other authors are quoted, where paralysis of the face occurred in tetanus arising from a wound of the face.

A Case of Progressive Muscular Atrophy—Type of Landouzy-Déjérine.

Freyhan (*Zeitschrift für klinische Medicin*, Vol. IX, Part IV, 1891) reports a case of this rare form of progressive muscular atrophy. It occurred in a girl aged 16 years, with excellent family history. The parents could not give any distinct history of its beginning, except they noticed that the movements of the face muscles were limited. The patient had never noticed anything wrong with the face, but she had noticed she could not whistle, and that it was difficult for her to blow out a light. This condition lasted until 13 years of age, when she noticed weakness in the arms and legs. She had no pain. On examination, the face was noticed to have an idiotic expression. Emotion could not be expressed. The skin of the face was smooth; there were no folds or wrinkles; the eyes were wide open; the lips were thick and the mouth half open. It was impossible for her to make any of the finer movements with the face. There was atrophy of other muscles of the body, but the greatest amount was in the muscles of the face.

Practical Electro-Therapeutics of Graves' Disease.

Cardew (*Lancet*, July 4, 1891) advises a galvanic current, two to three milliampéres, to be applied three times a day, six minutes to be taken in each application. The anode should be placed at the nape of the neck. The kathode should be moved from the mastoid process along the course of the great nerves. The electrodes are flexible metal, covered with wash leather, three and a half inches in diameter for the anode, and one and a half inches in diameter for the kathode. Four Leclanché cells or three bichromate cells will suffice. Six Scholl's chloride of silver cells (dry) will be enough and can be used by the patient in his home. The following directions are given: Thoroughly moisten the electrodes with warm water. Apply the anode to the nape of the neck, making firm pressure. Apply the kathode to the mastoid, and move it up and down slowly along the sterno-cleido muscle. Each application should last six minutes. Instructions can be written out for the patients, and they can apply the current at home. The author has used this means of treatment in a large number of cases, and believes it to be of great benefit in the vast majority of cases of Graves' disease. He has had failures, but it has been successful where other means have failed.

A Rare Hair Tumor of the Human Stomach.

Böllinger (*Münchener medicinische Wochenschrift*, June 2, 1891) details a case of rarity and interest as follows: A young woman, aged 17 years, was seen two and a half years before death; she was well preserved and had only the symptoms of a chronic catarrh of the stomach. It had been noticed that she bent forward in a peculiar way, especially at school. In the course of the disease she developed pain in the stomach and vomiting. In the course of the last year of life the patient took only milk, beer and water into her stomach, and that in small amounts. Six months before death the patient was confined to the house. Three weeks before death dropsy of both extremities and ascites developed. One year before death a very hard tumor was found in the gastric region, which was supposed to be a malignant growth. The *post-mortem* showed the stomach and duodenum to be packed tightly with hair. The contained hair weighed *thirty-two* ounces. The pieces of hair averaged six inches in length. The hair was so closely packed that it was scarcely possible to force fluid from the cardiac end of the stomach to the duodenum. As a young

child, the patient frequently pulled hair from her head and drew it through her mouth. The mother had never known the patient to swallow hair, and thought she had in later years given up drawing hair through the mouth. The author then quotes a case from Schörnborn, in which he did a successful gastrotomy and removed a mass of hair weighing eleven ounces. Besides these two cases the writer mentions seven others. The tumors were found mostly in patients who swallowed hair. The time consumed in the formation of the tumor varied from ten to twenty-two years. The nature of the tumor was never diagnosed during life before removal. Only one of Schönborn's lived. The author calls attention to the fact that "hair balls" are not unfrequently found in the intestinal canal of domestic animals.

Sarcinæ in Urine.

Finlayson (*British Medical Journal*, June 27, 1891) gives the history of two cases where sarcinæ were found in the urine and there were no accidents. In the first case they have been observed for fifteen years. A gentleman consulted the writer for a trivial complaint, and they were found in a routine examination of the urine. While a lad the man had been catheterized for an irritable bladder, which caused a little blood to flow. When a young man his bladder was irritable, but at 71 years he had no urinary symptoms. The second case was one of pyeletis in a woman who had been catheterized for retained urine. No symptoms were caused by the sarcinæ. It is worthy of note that the catheter was used in both these cases.

SURGERY.

UNDER THE CHARGE OF

D. HAYES AGNEW, M.D., LL.D., AND J. WILLIAM WHITE, M.D.

ASSISTED BY

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Reinfection of Syphilis.

In the *Journal of Cutaneous and Genito-Urinary Diseases*, June, 1891, are collected by Chas. W. Allen several cases of apparent reinfection of syphilis. The first case, reported by Lubarski, a man, had a primary sore followed by secondaries, and two years later by tertiaries. Eight years later he had a chancroid, which "appeared to pass into an initial lesion of syphilis;" three months later there were a roseola, angina and enlargement of the glands. Another case reported by Harrison Young was reinfected after an immunity of four years and had a hard chancre, followed by roseola, mucous patches, etc. A third case, by Ducrey, had a clear history of previous syphilis, and after ten years had a cicatricial induration of the labium, glandular enlargement, macular syphilide, mucous patches, and complained of rheumatic pains. Pospeloff had a patient who, five years after recovery from an attack of syphilis, had two lesions which were diagnosed as chancres. In six weeks there was a roseola, with enlarged glands, angina and patches on the tonsils. This second infection was more intense than the first. The last case, reported by Clatworthy, had the disease again three years after the first attack.

Antisepsis in Lithotrity.

Guyon (*Annales des Malades des Organes Genito-urinaire*, May, 1891) holds that the formation of urinary calculi is essentially a septic process, and that there is neither nephritis nor cystitis, unless infection is introduced by instruments. To preserve asepsis the genitals

are washed on the morning of the operation, and at the time of operating, with soap and water, and, before any instruments are introduced, douched with bichloride solution, 1–1000. The urethra is to be syringed out with a concentrated boric acid solution, a syringe with a piston being used. If the case is an infected one, nitrate of silver, 1–1000, is used instead of boric acid. By means of a catheter the bladder is also to be washed out, the stream being thrown in jets so as to agitate the liquid in the bladder and dislodge any shreds of mucus, etc., which may adhere to its walls. Metal instruments are sterilized by being exposed to a dry heat of 150° C. for a half to three-quarters of an hour. The evacuator is sterilized with the nitrate of silver solution. It should contain no valves. All instruments should be made of silver, or plated with the same, to resist the action of the nitrate solution. When steel lithotrites are used, the boric acid solution should be employed. In chronic cases of bladder trouble the catheters used should be kept aseptic, and vaseline, to which ten per cent. of salol has been added, used as a lubricant. Lavage of the bladder with a four per cent. boric acid solution, and 1–1000 or even 1–500 nitrate of silver solution, should be done from twice a day to once every two days according to the case.

The Point of Selection in Paracentesis of the Abdomen.

In an editorial in the *International Journal of Surgery*, May, 1891, the question of paracentesis abdominis is discussed, and a case of Frzebicky's (*Archiv für klinische Chirurgie*) quoted, in which profuse hemorrhage occurred from a puncture made at Munro's point, which is midway between the umbilicus and the anterior superior spine of the ilium. If the puncture is made at this point a considerable number are apt to be followed by hemorrhage. Directly in the linea alba is the best place, and if this is not possible it should be made in the outer half of a line drawn from the umbilicus to the anterior superior spine of the ilium.

Perityphlitis.

Sonnenburg (*Berliner klinische Wochenschrift*, No. 2, 1891) advises operation if the presence of pus is recognized. In the sero-fibrinous exudations around the cæcum an operation is excluded because they are absorbed. The larger the exudate at the beginning, the less likelihood is there of a purulent collection around the appendix, and the greater the probability of an infiltration around the cæcum. The small exudations which are, perhaps, circumscribed at the beginning, and situated usually at the classical space above Poupart's ligament, originate almost always from the appendix. Moreover, the greater the violence of the initial symptoms, the more apt is the trouble to be an exudation or phlegmonous process around the appendix. In most of the author's cases, violent pains in the umbilical region developed suddenly at night or after a movement, and was followed by vomiting with diarrhœa or constipation. In a few hours there was pain in the ileo-cæcal region, and indican in the urine. In perforation there is apt to be a small, hard, resistant space above Poupart's ligament, dull on percussion and sensitive to pressure. Even a slight rise of temperature, as 100.5°, is pathognomonic of pus. In cases where a small, indistinct fluctuation exists, an incision should be made down to the peritoneum and the wound tamponed, puncture of the abscess being made later. The incision should be long, curved and similar to that employed in ligation of the common iliac artery, and to avoid subsequent hernia it should be made as close to the crest of the ilium as possible. After several days, or as soon as adhesions have formed, the abscess is to be opened and drained. The wound is dressed daily, but not irrigated, and heals in four or five weeks. Of twelve of the author's cases in which immediate incision was done, five died of sepsis which was present before the operation. The following conclusions are submitted: (1) Endeavor to diagnose the simple from the purulent forms of perityphlitis. The sero-fibrinous cases do not require operation; but in patients suffering from tuberculosis or intestinal disease these may become purulent and then require a simple operation. (2) Purulent exudations originating in the vermiform appendix cannot be absorbed. (3) The more superficial the exudation, the earlier is operation indicated, that

is, within the first few days of the beginning of symptoms. (4) If the exudation is small, the operation should be done in two sittings, as early as possible after the beginning of the disease.

Ultimate Results in Nephrorrhaphy.

Tuffier (*Annales des Malades des Organes Genito-urinaire*, May, 1891) has had fourteen cases with one death from tetanus when the wound was nearly cicatrized. Four of these cases are of too recent date to be of value, having been done within the past four months. Of nine remaining cases all present a solid cicatrix with no tendency to hernia; the kidney is fixed, forming a part of the body wall, but its outline is easily visible. The pain in eight cases completely disappeared, not only when the patient was at rest, but even when moving around. One other case was only improved; he had undoubted signs of other abdominal trouble. The mortality of the operation is only three-quarters per cent., and of seventy-three typical operations there are eighty per cent. of complete cures or notable amelioration of symptoms.

A New Method of Performing Circular Enterorrhaphy.

F. T. Paul (*Lancet*, May 30, 1891) suggests the use of decalcified bone-tubes for use in this operation instead of the rubber ring as advised by Senn. For use in man he has had them made one and a half inches long and from one-half to three-eighths of an inch in diameter and one-eighth of an inch in thickness. One end of the tube is perforated for the insertion of sutures, and attached to it are the two ends of a thread carrying a needle. The tube being introduced in the proximal end of the intestine, its margin is secured by a continuous row of fine chromic gut sutures. The needle is carried on a grooved director about three inches down the distal gut and pushed through its wall. The rim of the distal gut is then sewed to the proximal end by a continuous row of fine chromic gut sutures. The needle and thread attached to the tube are to be held by an assistant, while the operator draws the distal end up over the tube and fixes the parts by a few Lembert sutures. The traction thread is then pulled tight and cut off short, the small opening caused by the needle requiring no further attention. Experiments performed on dogs by this method were very satisfactory.

A Vegetable Plate for Use in Intestinal Anastomosis.

Dawbarn (*Medical Record*, June, 1891) advocates the use of approximation plates made from a raw potato. For use on the human gut they should be one-third of an inch in thickness or even a trifle more. To prevent the threads from cutting through, they should be coarse, have a large knot and be sewed through a small piece of drainage tube or piece of cloth before passing through the plate. The plates should be so long that the opening is about twice the normal diameter of the gut to be operated on. In the dog they remain intact forty-eight hours; on the third day they begin to break, and disappear by the end of the fifth.

Why Syphilis is not Aborted by the Early Destruction or Excision of the Initial Lesion.

Attention has already been called to the excision of chancre, by an abstract of Jullien's article favoring it, which appeared in the July issue of the University Medical Magazine. The other side of the question is presented by R. W. Taylor, in the *Medical Record* of July 4, 1891. He says that the consensus of opinion is that the operation is utterly futile. One case he gives noticed, twenty days after connection, a sore, and applied the same day for treatment; it was cauterized and excised. Thirty days later the glands were indurated, and twelve days still later, secondaries appeared. A second case noticed a slight sore seventeen days after connection and applied the same day for treatment. It was at once excised.

Twenty days afterward, glandular induration appeared, and fifty-two after the first appearance of the sore, secondaries appeared. These cases, with many others, have convinced him that excision could neither suppress nor abort syphilis. Cases from other authorities are then quoted. Another case is detailed in which excision was performed on the fourth day. The excised parts of this and another case were submitted to Dr. Van Gieson for examination. He found a perivascular infiltration of small cells, and also a proliferation of the endothelium of the veins. These changes existed far beyond the limits of the initial lesion. The poison seems to strike at once for the smaller vessels and runs along them with great rapidity, instead of smouldering in a cold and aphlegmasic manner in a sharply limited space. The researches of Dr. Külneff show the same pathological process affecting the larger veins and lymphatics. These observations, backed by the evidences of the failures of excision, go to show that beyond the chancre there is sufficient syphilitic poison to infect the whole economy. Ricord has said that even if the entire penis was amputated before the initial lesion showed itself, syphilis could follow nevertheless. The author is as yet unsettled as to whether or not these observations will lead to the definite opinion that anti-syphilitic treatment should be instituted just as soon as we positively see the first appearance of the chancre.

EHRMANN in discussing this same subject in the *Centralblatt für die gesammte Therapie*, June, 1891, says that infection takes place by means of the lymphatics, and that at the time of the initial lesion the surrounding tissues are infected in the direction of the lymph glands. He excised twenty-six times, from eleven to twenty days after infection, and in all had negative results. Positive results were obtained in two cases. Physicians wounded themselves while operating on syphilitic lesions. Cauterization of the wound was done, and no syphilis followed. When the initial lesion is excised before the fourteenth day there is no surety that it is syphilitic, and when the diagnosis is without the shadow of a doubt it is impossible to abort the disease.

SURGERY OF THE LUNGS.

KRECKE, in the *Münchener medicinische Wochenschrift*, June, 1891, discusses operative procedures involving the lungs. Pneumectomy, he believes, is only rarely advisable in cases of circumscribed tumors. All other procedures he classes as pneumotomy. Gangrene is one of the most frequent indications, and a distinction should be made between gangrene complicated with purulent pleuritis and simple gangrene. Two cases of gangrene with purulent pleuritis are then described, one of which recovered. In simple gangrene, the diagnosis is only to be made by repeated punctures, until the locality is revealed by obtaining putrid liquid, air or shreds of tissue. A fatal case is detailed. Slawyk gives fourteen cases with eight recoveries, while, in nineteen collected by Seitz, there were four cures, four improved, and eleven deaths; even if the statistics were still worse, he believes the operation should be performed. Pulmonary abscesses should be treated the same as gangrene. Seitz gives eleven cases with five cures; and Slawyk, thirteen cases and only three cures. In bronchiectasis operation is to be avoided, unless a single bronchiectasis can be diagnosed. A fatal case is given. It has frequently happened to the author to fail to find the affected spot by repeated punctures, notwithstanding that the presence of pus was undoubted. In tuberculous cases it is only when there is a single cavity, which, by the retention of its secretions, is causing trouble, that an operation is to be thought of. In performing pneumotomy, the lung should always be opened with a blunt instrument. If the affected spot is much below the surface, then the thermo-cautery should be employed. In place of drainage, tamponing should be done with sterilized gauze. There is to be no washing out of the parts, as it may cause immediate death.

TÄUFERT in the same journal, 1890, No. 1, has collected twenty-one cases of opening and draining of lung cavities which were done during the last ten years. Thirteen of these pursued a favorable course. There were four tuberculous cases, one being cured; two of multiple bronchiectatic cases, both of which died; ten of gangrene, of which seven recovered; five cases of cavities and abscesses, all healed. In echinococcus of the lungs twenty-seven cases were cured out of thirty-two.

The Present Status of Syphilitic Therapy from a Continental Standpoint.

E. Kreis (*Correspondenz-Blatt*, March, 1891, p. 129) reviews, from a continental standpoint, the present treatment of syphilis. In regard to the excision of the primary sore as a means of preventing general infection, favorable results have been claimed by Neisser, Unna, Jullien and Leloir, while Neumann, Ricord and Von Sigmund believed it valueless. It can be said that we are, in general, unable to abort syphilis by excision of the primary sore; nevertheless, in selected cases it may be indicated under the following conditions: (1) Absolute surety of diagnosis. (2) Possibility of early operation before any of the glands show signs of infection. (3) That the induration be sharply defined so that it may be wholly removed without leaving surrounding infected tissue. As regards the propriety of beginning constitutional treatment during the primary stage, Fournier, Mauriac, Jullien, Schwimmer and others held that it prevented the appearance of secondaries, or caused them to pursue a milder course. Others, however, as Doutrelepont, Köbner, Kaposi, Unna, Neisser and Leloir, hold that the appearance of secondary symptoms is only deferred, and when they do appear they pursue a more obstinate and severer course. The author believes, with Neumann, that while by treating expectantly the skin symptoms are more marked, when early treatment is instituted obstinate affections of the mucous membranes and iris are apt to occur in their place. Early constitutional treatment is only advised in very extensive and obstinate lesions. In reference to the particular medicament to be used, inunctions give the best therapeutic effect with the least accompanying disturbances. Hypodermic injections, in view of the uncertainty of their action, are not to be recommended. Fournier advised intermittent mercurial treatment to be continued for three or four years, and he has been followed by Leloir, Lesser, Finger, Kopp and, above all, Neisser; but others, as Lang, Liday, Caspary and Köbner, oppose this and restrict it to exceptional cases, as it appears to be for most cases not only superfluous but harmful. The practitioner must decide this point according to the peculiarities of the special case. Syphilis can be regarded, if not in all cases as an absolute, at least as a relatively curable affection.

The Modern Treatment of Syphilis from an English Standpoint.

Jonathan Hutchinson, in the *Practitioner*, June, 1891, gives an extremely clear and practical exposition of his views on this subject. It is rare that the primary phenomenon of a hard-based ulcer is present until a month after the reception of the virus, and secondary phenomena are scarcely ever in full career under two months. Some years then usually elapse before tertiaries appear. The use of mercury has been steadily gaining the confidence of the profession. There are scarcely any anti-mercurialists left except in Edinburgh, and some of the worst cases seen have come from that place and had been treated without the use of that drug.

This advance in favor is due to the difference in the manner and time of administration. The "abortive treatment" is gaining ground, and under proper treatment there is not the slightest difficulty in nine cases out of ten in suppressing the second stage. All that is necessary is that the patient shall take continuously such doses of mercury as he can bear, just short of ptyalism. They must be sufficient to cause the rapid and complete disappearance of the primary phenomena. If they are allowed to linger, the secondary ones will invariably follow. Under mercury the primary sore will invariably melt away, and if a secondary rash has been allowed to develop itself, it will almost as invariably disappear also. It does not display such definite powers in the tertiary stage. The author still uses the hydrarg. cum creta (gray powder), to the exclusion of other preparations, and modifies the frequency of the dose rather than the dose itself. Blue pill, which comes nearest to it, is less efficient and more liable to disagree. A pill containing one grain of gray powder, with enough opium to prevent griping, is his almost invariable prescription. This is taken from three times a day to every three or two hours according to its effect. The patient is to abstain from fruit and green vegetables and everything else likely to cause diarrhœa. If this cannot be avoided, inunctions or the vapor bath may have to be resorted to. When mercury affects the tonsils or pouches of the cheeks, a combination of iodide of potassium with

a very small dose of mercury may be tried, or the former used alone. When debility, emaciation or neuralgic pains are produced, quinia and iron will have to be combined with the specific. Tonics seem to necessitate the use of larger doses and should not be used. Fresh air acts in the same way, and recovery is quicker if the patient is kept to his room or in bed. This is only rarely necessary. He believes that patients well treated by mercury during the secondary stage have a better chance than others of escaping tertiary phenomena. Syphilis is milder now than it was twenty-five years ago. In tertiary symptoms iodide of potassium is especially useful in disease of the bones, lupoid affections, gummata and affections of the nervous symptoms. In some patients it acts as a depressant, and then an ammonium or sodium salt should be substituted, although they are not so efficacious. A favorite prescription combines all three with what should never be omitted—a small quantity of free ammonia.

Of the tertiary phenomena he believes it true that if once cured by any agent they but seldom relapse, but if only partially cured they invariably do so. The iodides of mercury are more apt to disagree and are not so efficacious as the separate drugs. A long-continued mercurial course is very apt to cause a considerable improvement of the general health independent of its specific action. The number of persons whose lives have been shortened by syphilitic maladies is extremely small. Those affected with either syphilitic or mercurial stomatitis are more apt than others, if they smoke, to get malignant disease of the tongue. He is in the habit of giving mercury in ataxia and the general paralysis of the insane, if in the latter there is a history of syphilitic antecedents. Ataxy is seldom seen except in those who have had syphilis. In inherited syphilis, in infants, inunctions are effectual; also, a solution of bichloride of mercury in small doses acts better than gray powder. If there is any evidence of bone disease, iodide of potassium should be combined with it. If the specific is well borne and the child passes favorably through the secondary stage, there is very little danger of relapse, and good health may be expected, say till the age of 15, when keratitis, deafness, ulcerations of the throat, etc., may come on. In these cases specifics do not seem to exercise any definite power. Mercurials and iodides should be prescribed promptly and liberally, but we must be prepared to encounter much disappointment.

Lannelongue's New Method of Treatment for Tuberculosis.

At a recent meeting of the Academy of Medicine, in Paris, Lannelongue revealed his method for treating tuberculosis. It consists in the substitution for the tubercular neoplasms of a fibrous tissue which destroys morbid products. From experiments on healthy animals he found that injections of the chloride of zinc produced a fibroid change in normal tissues. On repeating these investigations in animals rendered tuberculous, injecting the solution outside of and around the tubercular foci, the same results were obtained. Occasionally the process ended in abscess, but generally in a new formation of fibrous tissue, with even disintegration and absorption of caseous matters. These injections have been made in children under fifteen for tuberculosis of the joints, bones, glands, and even lungs. The results in many cases appear to be excellent.

Lannelongue uses generally a ten per cent. solution of chloride of zinc and injects two or three drops at a given point, outside of the joint. The operation is repeated several times either without removing the needle, its point being directed a little to one side, or by making several punctures.

The Operative Treatment of Head Wounds.

Deaver (*Annals of Surgery*, June, 1891) formulates certain rules which he thinks should be applied universally in the treatment of head injuries. He holds that in all cases of contusion of the scalp accompanied by brain symptoms, the part of the skull underlying the seat of injury should be exposed by incision. If there is either a depression of the bone or a fissured fracture, with hemorrhage through the lines of fissure, trephining should be resorted to. This treatment is adopted because in the large majority of cases it is impossible to differentiate between simple contusion and contusion associated with depressed fracture.

The single disadvantage of this treatment is that it may convert a simple fracture into a compound one; against this, however, are to be ranged the very positive benefits that may be afforded by a careful exploration of the seat of injury, and by the prevention of any of the remote evil consequences attendant upon intracranial bleeding or unrecognized fracture.

The author advises trephining in all depressed and comminuted fractures whether there are brain symptoms or not. Compound fisssured fractures in which there is bleeding through the fissure or fisures should be trephined even though there is no depression of bone or no symptom of brain injury. In punctured fractures of the ethmoid, the trephine should be applied to the roof of the orbit at the inner angle.

The author gives an interesting resumé of the diagnostic points of extradural hemorrhage, which in his experience he finds the most frequent site of intracranial bleeding, and, as examples of the benefits accruing from the application of the treatment he prescribes, appends the histories of nine cases, in two of which the trephine was successfully employed in exposing the source of extradural bleeding and enabling the operator to secure the wounded vessel.

Grafts and Inoculation of Cancer in Man.

La Practique Medicale, Paris, June 30, 1891, in an editorial, strongly denounces the experiments of certain foreign surgeons in regard to the grafting and inoculation of cancer in man. It claims that such experimentation should be as justly a criminal offence as a wrongly-written prescription and advises that surgeons desirous of knowledge in this direction should make the experiments on their own bodies. In the same issue is published an account by M. Cornil of two experiments in cancer-grafting made by a foreign surgeon whose name is withheld. The first case concerned a woman with a large tumor of the breast, of which, after it was extirpated, a very small slice was inserted under the skin of the opposite perfectly normal breast. The incision healed by first intention, but soon an indurated swelling about the size of an almond appeared and was removed. The original and the grafted tumor on examination showed exactly the same sarcomatous structure. The graft showed quantities of cells in the stages of karyokinesis. The second case was one of tubular epithelioma of the breast, also in a woman. The same experiment was tried, with the same result, but the woman refused a second operation. From these facts, Cornil draws the conclusion that grafting of cancerous or sarcomatous tissue is perfectly possible in persons bearing the tumors; that the graft will become fixed, will develop and invade the normal tissues.

The Supposed Curative Effect of Operations Per Se.

Under this title, J. William White contributes a paper to the *Annals of Surgery* for August, 1891, which is of unusual interest and importance. The author's attention was first directed to this subject by reason of his experience with the operation of trephining for so-called traumatic epilepsy. During the past five years, with Dr. D. Hayes Agnew, he has trephined in fifteen cases of supposed traumatic epilepsy. All but one recovered from the operation. Death occurred from suppression of urine, probably secondary to etherization. Pathological conditions were found in four cases, but nothing abnormal was seen in the remaining cases. Although this was the case, they were, without exception, markedly improved by trephining; in two instances, even to the point of apparent cure, no return of symptoms having been observed for eighteen months and for two years after the operation. In the other cases, the results were strikingly favorable, convulsions disappearing for weeks or months, although previously of more than daily occurrence.

The author has classified the cases in which operation *per se* seemed to be the main factor in bringing about a cure, dividing them into three groups, in accordance with the anatomical seat of the symptom or of the supposed disease.

(1) Operations for the relief of nervous phenomena, as epilepsy, insanity, paralysis, etc.

(2) Operations for abdominal and pelvic disorders, as peritonitis, tumors, etc.

(3) Miscellaneous operations.

This classification is further carried out by grouping together (*a*) those cases in which

nothing whatever was found explanatory of the symptoms; (*b*) those in which some departure from normal conditions was observed, but was so slight as to be apparently inadequate to explain the symptoms; (*c*) those cases in which an apparently grave and irremediable condition was disclosed by an exploratory operation, but notably improved or altogether disappeared after mere inspection and handling, no further surgical interference having been thought justifiable.

Under the heading of "Operations for the Relief of Nervous Phenomena," Dr. White has tabulated, including his own service, 154 cases. In 56 cases of trephining for epilepsy, nothing abnormal was found to account for the symptoms. 19 cases were reported in six months or less after operation; 11 cases were reported from one to two years after operation; one was reported eight years after operation. Twenty-five of these cases were reported as cured; 18 as improved; in three cases it was mentioned that a relapse occurred later.

In 30 cases of ligation of bloodvessels for epilepsy, 14 were reported as cured; 15 as improved; one died seven days after operation. In the fatal case, the right common carotid artery was tied. No fit occurred after the operation. In 10 cases of castration for epilepsy, all were reported as cured. One case was reported four months after operation; four cases were reported more than two years after operation; in five, the time when reported is not mentioned. In six cases of incision of the scalp for epilepsy nothing was found to account for the symptoms. Three of these cases were reported as cured at the end of one year; two were reported as cured at the end of two years; two other cases almost similar were reported as cured.

Twelve cases of epilepsy are reported as cured by such operations as stretching of the sciatic nerve, excision of the musculo-cutaneous nerve, cauterization of the larynx, circumcision, application of a seton to the back of the neck, tenotomy of the external recti muscles, burning of the scalp, puncture of the heart, etc. Thirteen cases of spontaneous or accidental cures of epilepsy are also reported, at a time varying from two months to five years after the traumatism, which was a fall, a burn, a wound, an amputation, for intercurrent injury or disease, etc.

Passing from the cerebral to the spinal region, Dr. White cites an illustrative case of his own. A man, aged 55, rapidly developed paralysis of the limbs and body to the nipple line. Girdle pains and bed-sores appeared, percussion of the spine over the third and fourth dorsal vertebræ became painful. The reflexes were exaggerated, and light blows on the head in the direction of the spinal axis gave rise to exacerbations of the girdle pains. In spite of every remedial measure, these symptoms increased in severity for ten months. An exploratory operation was then undertaken. The spines and laminæ of the first five dorsal vertebræ were removed, the slightly thickened dura opened, some firm adhesions to the subjacent pia mater separated, the cord explored, and no serious pathological changes being found, the wounds in the dura and soft parts were closed. The girdle pains had entirely disappeared by the following day, sensation began to return in the feet the day after, voluntary motion in the toes after the eighth day. Finally the patient completely recovered and is now earning his living by manual labor.

In the list of abdominal and pelvic disorders apparently cured by operation *per se* a number of extraordinary cases are cited. The experience of Tait, who has more than once drawn attention to the astonishing disappearance of tumors, often of large size, after a mere exploratory incision, and the corroborative testimony of von Mosetig are cited at length. Koenig's analysis of 131 cases of tubercular peritonitis treated by abdominal incision is carefully discussed.

Under the heading of miscellaneous operations the author has given several of very diverse character. First are quoted cases of osteomalacia, cured, after weeks or months of confinement to bed, by either oöphorectomy or Cæsarean section.

Passing to another subject, the question of graduated tenotomy of the eye-muscles for the relief of severe nervous symptoms is carefully discussed. The author, acknowledging the value of tenotomies, in the restoration of equilibrium in badly balanced ocular muscles, is convinced that in numbers of instances of reported cases of chronic chorea, petit mal, and even delusional insanity, the effect of the operation *per se* is in large measure the potent cause of the supposed cure.

In seeking for a reasonable explanation of the phenomena observed in the above cases the author has formulated the conditions which are common to nearly all of them. These are:

(1) Anæsthesia; (2) psychical influence or so-called mental impression; (3) relief of tension; (4) reflex action or the "reaction of traumatism." These influences were operative in the majority of cases, although not one of them except the last applies to the whole list.

With the idea that it was conceivable that a disease of the nerve centres not reached by ordinary drugs might be affected by agents of such volatility and diffusibility as ether and chloroform, the author instituted a series of observations upon a number of epileptics in various stages of the disease. All other treatment was withdrawn, and ether was given to the production of full anæsthesia at intervals of from forty-eight to seventy-two hours. The results were either entirely negative or in consequence of the withdrawal of their bromides the patients grew worse.

Under the head of reflex action the author includes the "reaction of traumatism," as well as the effects of revulsion and counter-irritation.

In considering abdominal tumors attention is called to the possibility of the spontaneous disappearance of such tumors, the relation of this disappearance to the operation being coincidental; cases are cited in point. As to the cure or amelioration of growths thought to be malignant by merely exploratory operation, a long search through the literature of the subject has met with but little success.

The cure of tuberculosis of the peritoneum as the result of exploratory incision is explained on the ground that the removal of ascitic fluid allows the peritoneal surface to fall together and to acquire adhesions. The tubercles are thus surrounded by tissues in a high degree of activity which can now throw around them the limiting zone of young cells and eventually fibrous tissue, which may cause the tuberculous process to retrograde, the process being analogous to that occurring imperfectly around a cancerous growth.

As a result of a study of the subject, the author believes the following conclusions are warranted:

(1) There are large numbers of cases of different grades of severity and varying character which seem to be benefited by operation alone, some of them by almost any operation.

(2) These cases include chiefly epilepsy, certain abdominal tumors, and peritoneal effusions and tubercle, though the improvement in the latter is, perhaps, to be explained on general principles.

(3) Of the possible factors which, by reason of their constancy, must be considered, anæsthesia seems least likely to have been effective. The other three—viz., psychical influence, relief of tension, and reflex action—may enter in varying degrees into the therapeutics of these cases, and, taken together, serve to render the occurrence of occasional cures less mysterious.

(4) The theory of accident or coincidence scarcely explains the facts satisfactorily.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D.,

ASSISTED BY

DAVID CERNA, M.D., PH.D., AND THOMPSON S. WESTCOTT, M.D.

Treatment of Cancer of the Rectum by Intestinal Antisepsis.

Dujardin-Beaumetz (*Bulletin Général de Therapeutique*, June 30, 1891) has seen great good accomplished in chronic diseases of the large intestine, especially in cancer of the rectum, by the maintenance of a rigid intestinal antisepsis. He believes that the great

number of cancers of the rectum resemble, in the slowness of their evolution, certain uterine neoplasms, which, as is well known, can exist for years without compromising life, and which do not cause death except by obliteration of the ureters and the grave consequences ensuing therefrom. In the same way, in cancer of the rectum, he argues, when obstruction can be prevented and the danger of stercoræmia avoided, a state of general health can be maintained sufficient to permit the patient to gain weight and to live in a relatively satisfactory condition. His system is embraced under three heads: (1) local antiseptic irrigations; (2) antiseptic and purgative medication by the mouth; and, finally, (3) dietary regimen.

Irrigation is effected by the injection of a litre to a litre and a half or even two litres of water containing four grains of alpha-naphthol to the litre. The liquid may be voided almost immediately after injection.

The medicinal treatment embraces antiseptics and purgatives, and for the former he administers salol in the following formula:

℞. Salol . . . . . .
Salicylate of bismuth . . . . . .
Bicarbonate of soda . . . . . āā 150 grains.

Divide into thirty powders.

S.—One powder before breakfast and dinner.

The quantity of salol may be increased to forty-five or sixty grains a day. Solubility of the bowels is maintained by laxatives, saline waters, or by cascara or cascarine.

Finally, he orders a vegetarian diet of milk, eggs, farinas, green vegetables and fruit.

This method of treatment is also applicable to other affections of the bowels, having given excellent results in chronic inflammations of the large intestine, especially in catarrhal and pseudo-membranous colitis.

The Physiological Action of Chloralamid.

Concerning this lately introduced hypnotic, Wood and Cerna (*Notes on New Remedies*, June, 1891) have made an experimental study upon dogs, from which they deduce the following conclusions:

(1) Chloralamid has a slight local influence, and in large doses tends to produce mucous diarrhœa.

(2) It acts more powerfully upon the cerebral cortex than upon any other portion of the nervous system of voluntary life, thereby causing sleep and muscular relaxation; but it is also a feeble spinal depressant.

(3) It has a powerful influence upon the respiration, in moderate dose, by a centric action stimulating the respiratory rate, and probably also increasing the actual amount of air breathed, but in toxic dose causing death by paralysis.

(4) Its influence upon the circulation is a very feeble one, the changes produced by small doses being probably secondary to other effects of the drug; toxic doses, however, depress the arterial pressure by a direct action either upon the heart or upon the muscular coats in the arterioles.

These results lead the authors to believe that chloralamid is very worthy of trial as a hypnotic, its feeble action upon the heart promising to be of advantage in the use of the drug as a hypnotic in cases of feeble heart; while its stimulating influence upon the respiration would seem to fit it for employment in cases of nervous exhaustion. Dr. Wood's experience seems to indicate that the remedy is slower and less certain in its action than chloral. The statement of Hagen and Hüfler, that the drug is especially valuable in cardiac asthma, seems to be consonant with these experimental conclusions.

Treatment of Acute Tonsillitis by Salol.

Wright (*Journal de Médicine et de Chirurgie*, June 10, 1891) has employed salol in the treatment of fifty cases of acute tonsillitis, in all stages, with very satisfactory results.

He finds that this drug also acts well in all varieties of acute angina, diminishing the pain and dysphagia very rapidly, even before the objective appearances have been modified, and shortening the duration of the disease. The dose employed is sixty grains : a smaller dose is said to be without appreciable action.

A New Method of Direct Electrization of the Stomach.

Electricity has for a long time held so important a place in the treatment of visceral diseases that it is surprising that so little has been accomplished in perfecting a method for its application to the stomach, one of the most readily reached of all internal organs. In 1877 Kussmaul began to practise direct electrization of the stomach by means of an olive-shaped electrode introduced upon the extremity of an insulating stomach-tube, but the apparatus was clumsy, and, because of its direct contact with the visceral wall, forbade the use of a galvanic current. Bardet's improved electrode (1884) was a distinct advance, but was inconvenient and even impracticable for all but patients well accustomed to lavage of the stomach.

Einhorn (*Medical Record*, May 9, 1891) has constructed an electrode on the principle of his "stomach bucket," and proposes for it the name "Deglutable Stomach Electrode." It consists of a hard-rubber capsule (about one and one-quarter inches in length) perforated with numerous openings, this cage serving to protect the metal knob within from direct contact. The connecting wire runs through a fine flexible rubber tube. The capsule is readily swallowed and tolerated by the patient, and contact is secured, as in Bardet's electrode, by water in the stomach. The faradic current has been generally employed, and in all cases the degree of acidity of the stomach has been markedly increased. The author makes a preliminary report, which goes to show that most decided results have been obtained in cases of dilatation and in grave cases of chronic gastric catarrh. Two cases of pure gastralgia showed an amelioration after use of the constant current. The majority of cases of hyperacidity were improved, but required the administration of alkalies in the usual way.

A Means of Preventing Cocaine Intoxication.

Parker (*British Medical Journal* and *Deutsche Medizinal-Zeitung*, July 6, 1891) has discovered that the unpleasant or even poisonous symptoms which occasionally follow the local application of strong solutions of cocaine in the nasal and buccal cavities may be entirely prevented by combining the drug with resorcin. This combination is also of advantage in utilizing the antiseptic, astringent and hæmostatic properties of the latter drug ; the solution may be also employed in post-nasal catarrh, pharyngitis, hypertrophy of the tonsils, stomatitis and gingivitis.

Dermatol a Substitute for Iodoform.

This new antiseptic is described by Heinz and Liebrecht (*Berliner klinische Wochenschrift*, June 15, 1891) as a basic gallate of bismuth. It is a saffron-yellow, fine, non-hygroscopic powder, very like iodoform in appearance, but without odor. It is insoluble in the ordinary menstrua, and therefore requires to be brought in direct contact with the field of operation. It does not irritate and, on account of its insolubility and permanence, is free from poisonous qualities, even when placed upon a free absorbing surface.

Its physical properties would indicate its superiority to many of the commonly employed antiseptics, and all experiments go to prove its value as a topical application in surgical, gynæcological and dermatological practice, its peculiar drying power proving of advantage upon freely secreting surfaces, as in deep burns, eczemas and ulcerations. It also seems likely that the drug will prove an addition to the therapeutics of diseases of the eye, ear and throat. It may be used internally for the same indications as the subnitrate of bismuth in doses of thirty grains a day.

Strychnine in the Treatment of Chronic Alcoholism.

In 1888 appeared a short article by Portugalow-Samara (*Nedelja*, No. 8), in which this writer claimed wonderful success in the treatment of chronic alcoholism by the hypodermatic use of strychnine. The article attracted little attention except in the Russian journals, and nothing further on the subject has appeared, until the recent paper of Jergolski (*Wratsch*, No. 10, 1891). This author reports a series of ten cases treated by this method with gratifying results. A marked example was that of a joiner, 42 years old, who had for ten years drunk daily a half to one litre or more of brandy. The first day of treatment he received a hypodermatic injection of one-fortieth grain of nitrate of strychnine. Upon presenting himself the next day, he reported that he had had no restlessness or dragging at the stomach, and had not touched a drop of liquor. One-twentieth grain was injected on this and the seven subsequent days, and he was then dismissed with one grain of the drug in sixty pills, which were to be taken one a day every alternate week. At the end of fifteen months the patient reported himself completely cured. The other nine cases were similar to this, and in all some good effects were noted—in the majority a permanent cure, though in several a relapse occurred from various causes. Portugalow-Samara (*Nedelja*, No. 13, 1891) follows with a report of 455 cases of cure since his first experiments in 1887. According to his experience, ten to fifteen daily injections are required.

Two Drachms of Iodoform at a Dose.

Frauenthal (*New York Medical Journal*, July 11, 1891) reports the case of an ignorant Irishwoman, suffering with an axillary abscess, who, by mistake, swallowed at one dose two drachms of iodoform. Twenty-four hours later she had severe headache, griping pains in the abdomen, and purging, which continued for twenty-four hours. The odor of the drug on the breath and the taste remained for several days. No other unpleasant symptoms were noted. It is needless to say that her axillary abscess was not affected.

Phenocoll Hydrochlorate.

A new antipyretic and antirheumatic, lately introduced to notice, is the hydrochlorate of phenocoll. Its base, phenocoll or amido-acet-para-phenetidin, is closely allied to phenacetin (acet-para-phenetidin), being produced, by a similar process as the latter, by acting upon para-phenetidin with amidacetic instead of glacial acetic acid. The hydrochlorate of this base is a white finely crystalline powder, soluble in about sixteen parts of water at 17° C., and having a neutral reaction. Kobert's experiments upon animals show that this drug is not poisonous and has no destructive action upon the blood. Von Mering has administered fifteen grains to patients ill of typhoid or pneumonia, and has effected a reduction of three and three-fifths° F., without collapse or cyanosis. He considers the action upon temperature of fifteen grains of the drug to be equal to that of twenty-two to thirty grains of antipyrin or twelve to fifteen grains of phenacetin.

Hertel (*Deutsche medicinische Wochenschrift*, No. 15, 1891) reports some experiments with the drug, which go to show it to have some value upon the pyrexia of phthisis, and upon the pain and fever of acute rheumatism. No bad effect upon the kidneys was observed. After the administration of about seventy-five grains, the urine exhibited a brown-red to deep blackish-brown discoloration, which became darker on exposure. This color was deepened by the addition of chloride of iron; the additional presence of concentrated sulpluric acid clears up the color, and by transmitted light gives a greenish tint. Elimination is completed in twelve hours.

New Organic Combinations of Iodine.

Three new drugs have been obtained by the combination of iodine with antipyrin, antifebrin and phenacetin respectively.

Iodopyrin, originally obtained by Dittmar in 1885, by the action of chloriodine upon antipyrin, has been lately produced by Ostermayer after another process, and has been

investigated by MÜNZER (*Prager medicinische Wochenschrift*, Nos. 4 and 5, 1891). It occurs as colorless, prismatic needles, melting at 160° C., readily soluble in hot water, but with difficulty in cold water and alcohol. It is tasteless and without characteristic odor. Münzer has employed it in typhoid fever and phthisis in doses of seven to twenty-two grains, and finds that it has an antipyretic effect similar to that of antipyrin. The urine exhibits a weak antipyrin but strong iodine reaction. Therapeutically it has shown at one time the action of antipyrin and at another that of iodine or its alkaline salts.

Iodantifebrin is another similar combination. It appears as rhombic plates, without taste or odor, slightly soluble in cold water, alcohol or ether, and readily soluble in hot alcohol and glacial acetic acid. It has been investigated by Münzer. Unlike the preceding drug, it is not broken up in the system and possesses no therapeutic properties.

Iodophenin (*Pharmaceutical Zeitung*, No. 40, 1891) produced by the action of iodine upon a solution of phenacetin in glacial acetic acid, is a chocolate brown powder, melting at 130 C., soluble in hot and cold alcohol, but very insoluble in water. It contains fifty-one per cent. of iodine. Its therapeutic value is not yet made out.

Another substitute for iodoform lately proposed by YVON (*Therapeutische Monatshefte*, June, 1891) is *antiseptol*, a substance produced by the action of iodine and iodide of potash upon cinchonine sulphate. It is a very light, soft, red-brown, odorless powder, insoluble in water, but soluble in alcohol and chloroform. It contains about fifty per cent of iodine.

OBSTETRICS.

UNDER THE CHARGE OF

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ASSISTED BY

RICHARD C. NORRIS, M.D., AND W. REYNOLDS WILSON, M.D.

MELÆNA NEONATORUM.

GRAY (*Pacific Medical Journal*, June, 1891) reports the following case: On the ninth day the child refused to take the breast, and the nurse noticed his stools dark-colored. During the day there were five tar-colored stools, and the child became collapsed. Warm applications and small doses of hot whiskey and water were administered. As the child refused nipple, artificial food was given. Improvement followed, and in four days he appeared quite well. Nearly a month later he vomited a quantity of bright-red blood (about an ounce), followed by several black clots, screamed with pain, and immediately became collapsed. External heat, and small doses of tannin and opium were given. Blood was vomited twice the next day, and the tarry stools returned. Improvement again followed, and for two weeks the child was apparently well, when diarrhœa developed, the stools always offensive and twice bloody. Castor oil, followed by salol, checked the frequent bowel-movements. For two weeks his sole food was brandy and water, which was all he could be induced to take. Continuing sometimes worse, sometimes better, never taking any nourishment except brandy, the child died about two months later. Gray considered this case one of ulcer of the stomach; the hæmatemesis, the pain caused by everything the child swallowed, and his refusal of everything that called for the least work by the stomach, all seemed to point to gastric ulcer.

Melæna neonatorum is a rare disease. Hecker says that it occurs about once in 500 births, Gerich says once in 1,000, and Leopold has seen in his clinic in Dresden only two cases out of 7,500 births. Many distinguish between melæna vera and melæna spuria, which latter is caused by blood being swallowed by the child. Here the blood originates

either from the breast of the mother or from the nose or mouth of the child. In these cases the blood is mostly vomited, while only a very small quantity is passed per anum.

Kundrat distinguishes four groups of melæna neonatorum vera:

(1) Hemorrhages in healthy, strong children, whose birth was normal, having origin in a hyperæmia of the mucous membrane of the digestive tract in consequence of a disturbance in the altered circulation of the newborn.

(2) Hemorrhages which appear under abnormal circumstances, and often leave behind evident changes in the infantile organism. To this group belong those cases where, after death, round ulcers have been found in the stomach or duodenum, which were the sources of the hemorrhage.

(3) Hemorrhages where other pathological changes exist as origin (Ritter's hæmophilia acquisita neonatorum).

(4) Hemorrhages from congenital hæmophilia.

The first two groups only can be said to be melæna vera neonatorum.

Among the causes of melæna neonatorum may be mentioned:

Sex.—Rilliet says it occurs more frequently in boys than in girls. *Age.*—Melæna neonatorum is essentially an affection of the earliest days of life. It occurs usually in the first week after birth, the majority from the first to the fourth day, some on the sixth day, but also sometimes later, up to the twentieth day. Rilliet and Barthez report cases which occurred in the fifteenth and twentieth weeks. *Heredity.*—Rahn-Escher insists upon the influence of this cause, without denying the evil effects that impaired health of the parents produces on the constitution of the children; a comparison of the frequency of the hereditary conditions, on which he bases his assertion with the extreme rarity of melæna, is ample reason for objecting to heredity as a cause of the latter. But that objection has less value when the parents are subject to hemorrhage, or when other children in the same family are similarly affected as in Rilliet's case of twins.

The character of the labor, the condition of the child at birth, and the first care it receives, may also have an influence in the causation of melæna neonatorum.

Other causes are rise of blood-pressure, diseases of the vessels, alterations of the blood, lesions of the vessel walls, syphilis, and round ulcers of the stomach and duodenum. The prognosis is doubtful. When the hemorrhage comes from an ulcer, the case is pretty certain to terminate fatally. Wiggert and Silbermann assert that no case recovered where the hemorrhage appeared after the seventh day. Rilliet and Barthez place the mortality at sixty per cent., Landau and Gerhardt fifty per cent., Hecker thirty-five per cent., Silbermann fifty-six per cent., and I. Halliday Croom at sixty per cent.

In the treatment Widerhofer, Rilliet, Barthez, Landau, Gerhardt, Silbermann and others recommended cold applications to the abdomen, cold drinks and enemata, internally astringents, and, in commencing collapse, stimulants.

Vogel and Gerich are opposed to the application of cold in these cases. Vogel warms the room and surrounds the child with hot sand-bags. By causing a turgescence of the vessels of the integument the overloaded intestinal veins are relieved, and this is best accomplished by a high temperature. Kirvisch recommended warm baths. Gray is inclined to follow Vogel in condemning the use of cold. If he had applied cold to his little patient he believes he would certainly have killed him by further reducing his temperature. He considers it more rational to attempt to restore normal temperature of the body by warm applications, which was done in his case by holding the patient near the fire, and wrapping him up in hot flannel—practically the treatment recommended by Vogel.

Ectopic Gestation Complicating Normal Pregnancy; Abdominal Section; Recovery.

Worrall (*British Gynæcological Journal*, May, 1891) reports an interesting case of the above. Two years before he saw the patient she missed her menses for about six weeks; was one night awakened from sleep by a severe pain in the abdomen, causing her to feel faint and to break out into a cold perspiration. Vomiting, diarrhœa and a red vaginal discharge followed. Pain and vomiting persisted for six weeks, confining her to bed.

Meanwhile she noticed a lump on the lower abdomen, a little to the left, which gradually enlarged, and in about four months she distinctly felt movements. About eight months from cessation of catamenia a sudden flooding, unaccompanied by pain, came on and lasted for three days. A month later a moderate flow appeared, accompanied by continuous and severe bearing-down pain, which continued for a fortnight. From this time the tumor decreased in size to a certain point, thereafter remaining stationary. Eight months later menstruation ceased, soon followed by enlargement of the abdomen. Worrall found, on careful examination, a pregnant uterus, and to the left of this what he believed to be an ectopic fœtus which had been carried by its mother for nearly two years.

In the treatment of the case three courses were to be considered—to do nothing, induce premature labor, or remove the ectopic fœtus by abdominal section. Suppuration of the ectopic cyst, with death from septicæmia, either before or during the puerperium, contraindicated both delay and induction of premature labor. Removal of the older fœtus by abdominal section exposed the mother to no greater risk, gave the fœtus *in utero* a fair chance, and, if successful, left the patient restored to perfect health. The latter was done, the incision being made well to the left along the linea semilunaris, in accordance with the theory of Tait, that the peritoneal cavity might escape, which it did not do, owing to the fact that the fœtus had developed in the posterior layer of the broad ligament. An attempt was made to remove the sac, but its pelvic connections were so deep and extensive, in addition to adhesions to intestine and parietal peritoneum along the upper surface, that in view of the desirability of disturbing the uterus as little as possible it was considered wiser to leave it. A careful peritoneal toilet having been made, the wound was closed in such a way that the sutures, which brought together the abdominal walls, also closed the incision of the sac, turning in the edges of the latter so that the serous surfaces were opposed, and keeping them in contact with the parietal peritoneum. No drainage tube was used. The child measured nineteen and one-half inches, and weighed four and one-half pounds; was extremely flaccid, and the skin, quite soft and healthy, was absent from a considerable portion of the back. The next day labor began, and as soon as the os was sufficiently dilated forceps was applied. A week after delivery there was considerable sanious-smelling discharge on the dressings, but probe could not be passed into sac anywhere. Two days later probe entered cavity of sac. Incision evacuated about half a pint of sanious pus; the sac was washed out with perchloride solution, 1 to 4,000, and a large rubber drainage tube was passed to the bottom. Subsequently daily irrigations with carbolic solution, 1 to 40, were used, and the sac kept as dry as possible by lamp-wick passed through drainage tube. A little less than two months after the operation the sac had gradually contracted, and the patient was discharged, with a small sinus which soon closed.

Porro's Operation in Dystokia from Multiple Myomata.

Jahreiss (*Münchener medicinische Wochenschrift*, No. 21, May 26, 1891) details the particulars of a Cæsarean section where he was induced to remove the uterus on account of a great number of myomata which, in the form of subserous and interstitial tumors, completely involved the organ The largest of these tumors, springing from the posterior wall of the uterus in the lower uterine segment, obstructed the pelvic cavity to such a degree that the distance between the tumor and the anterior pelvic wall measured not more than one inch.

An interesting complication occurred in the effort to drag the uterus forward in order to apply the compression-ligature, when the pedicle of the tumor which was attached to the lower part of the uterus gave way, and the tumor itself remained embedded in adhesions. The operator, deeming it wise to remove this detached tumor, shelled it out from its peritoneal covering and obliterated the cavity which was left by bringing the walls together with catgut sutures.

Jahreiss considers that the successful result of this case places it among those which prove the superiority of the intra- over the extra-peritoneal method of caring for the stump in cases of myomotomy.

Pathological Anatomy of Eclampsia.

In fifteen cases of eclampsia, Schmorl (*Centralblat für Gynäkologie*, No. 29, 1891) found necroses in the liver in almost every case. He divides them by their microscopic and macroscopic characteristics into hemorrhagic and anæmic, the first being much the more frequent. In five cases in which the heart and pancreas were also examined, necrotic patches were found mostly anæmic in the pancreas, mostly hemorrhagic in the heart. In the kidneys there was invariably more or less of a degenerative process to be seen in the epithelium, and frequently hemorrhages along the boundary line of the cortex. In almost all the cases hemorrhages could be discovered in the brain, some macroscopic, but most microscopic. Pathological conditions were also found in the bloodvessels. There were numerous ruptures of smaller vessels which the writer ascribed partly to the compression of internal organs by the muscular spasms, partly by the contraction of the vessels themselves which accompanied the convulsions. There was noted, moreover, a separation of the endothelium in good-sized shreds, which led to embolic obstruction of the vessels. This was also favored by the rupture of small vessels and the entrance into the circulation of parenchymatous cells. There were found not only emboli of liver-cells, as observed previously by Jürgens and Klebs, but also indubitable renal cells, and cells of placental origin in the circulatory system. The presence of these cells not only stopped up small vessels but also gave rise to thrombus formations and consequently to grave disturbance of the circulation. The whole pathological picture, says the writer, points to some poison in the maternal blood. Curiously enough, he would ascribe this poison to the decomposition of the parenchymatous cells within the blood, instead of giving the obviously correct view, that the poison emanates from the fœtal body and is not excreted because the maternal kidneys have become, from some cause, insufficient to do their work of excretion.

An Abdominal Pregnancy Secondary to Tubal Gestation.

In an abstract from a Dutch journal in the *Centralblatt für Gynäkologie*, No. 32, 1891, is described a case in which a 6-months-old fœtus was found, after abdominal section, free in the abdominal cavity, surrounded by its amnion, from which the liquor had been absorbed, and attached by a few adhesions to the omentum. In the neighborhood of the uterus there was a small, spherical tumor made up of old placental tissue. It communicated with the tube. There was no trace of an umbilical cord, and there was no evidence of bleeding at any time. The writer surmises that the ovum must have been extruded from the fimbriated extremity of the tube or else have escaped from a very small rupture early in gestation; otherwise there must have been considerable bleeding.

Gonorrhœal Ophthalmia Developed before Birth.

At the June meeting of the Berlin Obstetrical and Gynecological Society, Krukenberg exhibited a child born a month prematurely after a tedious labor, a long second stage and early rupture of the membranes, in whom ophthalmia was well developed at the time of birth. Another case not before reported was described, and two more were quoted, with a third that was doubtful. The development of gonorrhœal ophthalmia *intra partum* is exceedingly rare. In the few reported cases there was in each a tedious labor with early rupture of the membranes. Given these conditions, the development of gonorrhœal ophthalmia before birth is conceivable, for the time of incubation, according to Bumm, may be only twelve hours.

Complete Rupture of the Uterus, with Extrusion of Child and Placenta into the Abdominal Cavity: Cured without Operation.

At the meeting of the Obstetrical and Gynecological Society of Vienna, in May, 1891, C. v. Braun exhibited a patient who three months before had experienced a complete

rupture of the uterus during labor. The tear ran transversely above the cervix and longitudinally up to the tube. The child was extracted from the abdominal cavity by craniotomy. The placenta and large masses of clotted blood were then removed. Through the tear a tampon of iodoform gauze was introduced, and further the uterus, cervix and vagina were tamponed. The patient made a good recovery. Braun referred to other remarkable cures by this treatment and recommended it in preference to laparotomy in private practice.

GYNECOLOGY.

UNDER THE CHARGE OF

WILLIAM GOODELL, M.D.,

ASSISTED BY

J. M. BALDY, M.D.

The Treatment of Chronic Disease of the Uterine Adnexa.

Robert Bell (*The British Gynæcological Journal*, May, 1891) divides the treatment of this class of diseases into medical and surgical. During the past year he has treated 200 such cases and only had to resort to surgical measures seven times. His experience teaches that neither disease of the Fallopian tube nor ovary tends to develop without some pre-existent affection of the uterus. If this disease of the uterus therefore persists, it is only reasonable to infer that there can exist no tendency on the part of the diseased ovary or tube to recover; while on the other hand some probability of resolution taking place in the adnexa may reasonably be expected if the primary disease is removed, and it is upon this principle that we would naturally base one's method of treatment. The bowels should first be regulated. If there is endometritis, which there most probably is, the uterus should be curetted and a bi-weekly intra-uterine application of iodized phenol made, after which a tampon saturated with the glycerine of alum and boracic acid is introduced into the vagina. If the uterus is displaced it should be restored by means of the uterine probe and supported by means of the tampons employed. If a lacerated cervix exists, which has caused or is keeping up the endometritis, a trachelorrhaphy will be necessary. He believes that salpingitis is almost invariably due to extension from endometritis. If the foregoing treatment does not cure the pelvic mischief, the patient must have rest, both physically and sexually, and, in conjunction with the former, massage is most beneficial. If adhesions exist they should be broken down each time the tampon is introduced by a system of massaging the parts per vaginam. Under those circumstances the tampon should be soaked in a ten per cent. solution of ichthyol in glycerine and boracic acid. In ichthyol we have a powerful resolvent and one deserving of an extensive trial in pelvic inflammations. If this treatment does not succeed, sentiment should no longer stand in the way, but the offending organs must be removed. That hesitancy which charitable people may be disposed to designate as the epitome of refinement of feeling may and does destroy its victims, and that quite as ruthlessly and with infinitely more torture than the surgeon's knife inflicts. Let, therefore, no hard-and-fast line be drawn, but calm, unbiased and unfettered judgment decide what is for the immediate and lasting benefit of the patient.

Some Fallacies in Gynecology.

F. C. Ferguson (*Times and Register*, July 4, 1891). The pessary fallacy is a most pernicious one. The pessary craze still has a firm hold, not only upon women, but clings tenaciously to the majority of the profession. There are some cases where a well-adjusted pessary serves a good purpose as an adjunct to the cure or promotion of the comfort of the patient, but the indiscriminate, unscientific, and, perhaps, criminal use of pessaries by

amateur gynecologists and physicians experienced in general practice, but unskilled in gynecology, is only mentioned to be condemned in the strongest terms. Another fallacy is "the ulceration of the os." This disease exists, in the majority of cases, only in the mind of the physician. Laceration of the cervix does not necessarily require an operation for its cure. Experience has taught Ferguson that the great majority of cases of laceration of the cervix can be cured without subjecting the victims to dangerous operation. During the past year he has operated on but one laceration of the cervix; during the same time a dozen have been cured by other treatment. The "change of life" is not necessarily a period of peculiar peril and intense suffering as is commonly supposed. If a woman has good health and no organic disease of the reproductive organs, she will suffer nothing more at this period than slight nervous symptoms, such as flushes, slight headache, etc., the results of vaso-motor disturbances. If she has pain or hemorrhage, or profuse leucorrhœa, singly or combined, it is almost certain she is afflicted with organic disease, as cancer, fibroid tumor, endometritis, salpingitis, or ovaritis. During the past year four women who were supposed to be suffering from "change of life" have passed through the hands of Ferguson, and three of them are now dead from cancer. A fallacy of firm hold in the minds of many is that pruritus vulvæ is frequently a neurosis—that is to say, that it is of centric origin without any lesions of structure, or accompanying affections to account for it. Where uncleanly habits of the patients are not the cause, the trouble can be traced to some disease existing in the vagina, the uterus or the bladder. These are only a few of the numerous fallacies which are in existence.

Intra-ligamentous Ovarian Cystoma.

Cornelius Kollock (*Annals of Gynæcology and Pædiatry*, June, 1891). When a cystic tumor in the abdomen is firmly fixed below, with no history of inflammation during the earlier stages of the growth of the tumor, and the uterus is drawn up out of the pelvis and lies behind or in front of the cystoma, an intra-ligamentous growth may be suspected. Even with this finding there is, perhaps, nothing in the shape of pelvic or abdominal neoplasms which is so embarrassing to the surgeon as the diagnosis of these cystomata. Various opinions had been expressed in the case of a patient seen by Kollock, viz., ovarian cystoma, fibro-cystic myoma, and ectopic gestation. He himself believed it to be fibro-cystic. The enucleation was a tedious but not a bloody one. An abscess the size of a pullet's egg, containing pure pus was encountered during the removal, which was emptied and carefully cleansed. Towards the bottom, as the layers of the broad ligament were thrown back, the tumor seemed to be partially pedunculated, and it was tied with a double silk ligature. The operation consumed an hour. The patient was much exhausted, and once or twice work had to be suspended and hypodermics of brandy administered. The patient made a good recovery and is now perfectly well.

Supra-vaginal Hysterectomy *versus* Electrolysis in Uterine Fibroids.

Opie (*Journal of the American Medical Association*, July 11, 1891) has performed supra-vaginal hysterectomy for fibro-cystic tumors of the uterus three times, the tumors weighing from fifteen to twenty pounds each. Two of the women recovered and one died. The death was caused by septic peritonitis. He has for two years past used electricity hopefully, and for some time enthusiastically, in fibroids of all kinds. Both the intra-uterine and the puncture methods have been tried. While the applications seemed to improve the general health in some cases, stopped hemorrhages and greatly relieved dysmenorrhœal pain, he cannot claim to have dissolved any single fibroid or made even an arrest of growth of a cystic fibro-myoma. He caused a peritonitis by a puncture of a large fibroid through the abdominal wall and has seen a case of sepsis follow an intra-uterine application. He treated one case of fibroid which, when first detected, was as small as a pea in the anterior lip of the cervix. In the last eighteen months twenty-five electrolytic applications have been made to it. In spite of this it has trebled in size. After two years' persistent effort

with a considerable amount of material, he thinks he has some justification for having lost his enthusiasm, and even in being discouraged as to this so-called conservative plan of dealing with fibroid tumors.

Non-surgical Treatment of Cancerous Uteri.

Reed (*Journal of the American Medical Association*, July 11, 1891) thinks that complete removal of the uterus or even amputation of the cervix is unnecessary in many cases of cancer of the cervix. He has used the following treatment with success: Once a week the sharp curette is used, followed by an application of the pure chromic acid. He prepared a swab of absorbent cotton, as large as would pass into the cervical canal. After he had rapidly reamed it out with the curette, and on withdrawing the latter, immediately dipped the swab into water, then into the dry chromic acid, and carried it as far as possible into the cervix and cavity and held it there until the hissing and smoke ceased; then withdrew the swab, packed the cervix with cotton saturated with the pure persulphate, which was directed to be removed by a string attached for that purpose in three or four days. The hemorrhage from the use of the curette was fearful, but immediately stopped on contact with the chromic acid. He has tried this treatment on but a single patient. She was directed to let him know whether hemorrhage should occur in the interval of his visits, and but once did she send for him. The treatment was continued for several months; and now, some four or five months later, she is apparently perfectly well, with no tendency to a return of the growth.

On the Use of Cocaine in Gynecological Surgery.

Humiston (*Journal of the American Medical Association*, July 11, 1891) uses cocaine for almost all plastic operations on the vagina and cervix. For dilatation of the cervix and curetting of the uterus he precedes the application of cocaine by a tablespoonful of whiskey. A four per cent. solution of cocaine, which has two minims of pure phenol in each half-ounce of solution, is used, and five minims are injected into the posterior cervical lip. Continue the injections in several places until about twenty minims have been used. Dilate sufficiently for the introduction of an intra-uterine syringe, and then throw ten minims into the uterine cavity. The operations of dilatation and curetting can now be carried out with little or no pain. For the operation of trachelorrhaphy one can use cocaine and have an absolutely painless operation. It will rarely be necessary to use more than half a drachm of a four per cent. solution. For restoration of the perineum he adopts the split-flap method, and with one puncture of the hypodermic needle in the median line the whole field of operation is anæsthetized. Only forty minims of the four per cent. solution are needed. Twice he has dilated the urethra for fissure and irritable caruncula, with but slight suffering and a satisfactory result. The operation is usually done in the morning. The patient omits breakfast, and ten or fifteen minutes before the operation the alcoholic stimulant is given. On no occasion has a patient asked for any other form of anæsthetic after starting with the cocaine.

Chronic Endometritis.

Cain (*Medical News*, July 11, 1891), after reviewing and condemning the different methods of treatment in use for this disease, details his own method of procedure. He first makes free use of the curette as the safest and speediest means of removing fungoid vegetations and adenoid degenerations of the endometrium. The curette is followed by an application of Churchill's tincture of iodine or diluted carbolic acid. The treatment is always preceded by a careful washing out of the vagina and uterus with a solution of 1-1000 or 1-2000 corrosive sublimate. In cases in which this treatment is not admissible, or in which it has failed to afford relief, his next reliance is in the electro-chemical action of negative galvanism in removing the vegetations. This should be used for ten or fifteen minutes at each treatment, and the treatment should be repeated twice a week. The strength of the current

to be employed will depend largely upon the acuteness of the case and the susceptibility of the patient to electrical influence. The chronic cases always require the stronger currents. The dosage may be fixed at from ten to three hundred milliamperes.

Retroverted Gravid Uterus Causing Retention of Urine.

Bradford (*Annals of Gynæcology*, July, 1891) recently saw a multiparous woman who had been unable to pass her urine for four days. Examination showed her to be four months gone in pregnancy, with the uterus retroverted. The cervix was pressed hard against the neck of the bladder, thus causing the retention. The distended bladder, from which sixty-three ounces of urine were drawn, extended to the umbilicus. The uterus was replaced by the bimanual manipulation, with the patient in the dorsal decubitus. The organ remained in place and gave no further trouble. The urine was passed spontaneously, and so continued.

The Use of Vaginal Tampons.

Sellman (*Journal of the American Medical Association*, July 11, 1891) intends to convey in this paper his impressions of the dangers attending the use of tampons, and also to prove that on many occasions when we think that we have applied them in a scientific manner, it has been improperly done, and carried out in a manner that will do much harm to our patient and perhaps develop injuries that may require months of treatment to overcome. Vaginal tampons introduced for hæmostatic purposes are seldom required, and when used are likely to be attended or followed by great injury. He makes this exception—the use of the tampon for the purpose of provoking uterine contractions and softening of the cervix—in cases where it is desired to bring on premature labor, as, for example, cases of placenta prævia. The packing of the vagina is sometimes justifiable in cases of hemorrhage due to the presence of uterine fibroids. In hemorrhages occurring during the progress of cancer of the cervix it is unsafe to tampon. The presence of tampons in the vagina interferes with the evacuation of the bladder and with the proper emptying of the rectum. Tampons are responsible for the production of serious inflammatory conditions of the uterine adnexa, peritoneum and cellular tissue. He advises the application of tampons only under the following conditions: In office practice, after making an application to the endometrium, if the agent employed is likely to flow down and excoriate the external genitals. This is to be removed as soon as the patient reaches home. In cases of prolapse of the uterus, where there is no uterine catarrh—used as a pessary. Also in cases of prolapse of the vaginal walls under similar conditions. After plastic operations upon the vaginal walls, where there is no danger of hemorrhage taking place above the point where the tampon has been placed. In cases of hyperplasia, with little or scanty secretion from the endometrium.

MISCELLANEOUS.

THE UNIVERSITY MARINE BIOLOGICAL ASSOCIATION.

THIS association was founded for the purpose of establishing and maintaining laboratories and aquaria on the coast of the United States, where accurate researches may be carried on, leading to the improvement of the biological sciences and especially to an increase of our knowledge as regards the food, life-conditions and habits of American food-fishes and molluscs, and for stimulating public interest in these matters. The location of the first laboratory is at Sea Isle City, N. J. The importance of possessing seaside laboratories at which the working naturalists of the country, the teachers in schools and colleges, the patient investigators in pure science, the government experts, and others, could secure a practical acquaintance with the structure and habits of marine animals, has long been appreciated in Europe. It is proposed to issue, at irregular intervals, monographs which shall deal with the structure and life-history of the types of life in this region, written in a style which shall be clear to the uninitiated reader while retaining strict scientific accuracy. These monographs are to be well illustrated, and a special publication fund should be secured at as early a date as possible. To-day our Government and State fish hatcheries are the patterns for the world, and our agricultural experimental stations are proving of untold benefit to those who till the soil or raise domestic animals. But in one direction we are still sadly behind the times. Until very recently America has had no well-established laboratories offering facilities for the study of the lower forms of marine life, and her naturalists have been obliged to accept the courtesy of foreigners for their opportunities of gaining an acquaintance with those smaller forms which are either valuable in themselves, or serve as sources of food supply for valuable fishes, etc.

An annual report, summing up the result of the season's work and calling attention to the achievements and needs of the Laboratory, will be published, to be distributed among the legislators of New Jersey and other States, to the members of the University Marine Biological Association, and to the general public, that they may become aware of the importance of giving encouragement to laboratories of this character.

The number of naturalists who can be employed in special investigation, and definitely retained for the purpose of carrying on their researches throughout the year, must depend on the funds subscribed by private individuals and public bodies for the purpose. The first charges on the revenue of the Association are the workings of the sea-water circulation in the tanks, stocking the tanks with marine plants and animals and feeding the latter, the payment of servants and fishermen, the hire and maintenance of fishing boats, and the salary of the Director, the Scientific Staff and Laboratory Corps. These are the only salaried officers of the Association.

The Marine Biological Association urgently needs additional contributions for the establishment of a sinking fund and for the purchase and maintenance of a sea-going vessel, by means of which investigations can be extended to all such points of the coast as may be of interest in regard to their food products (fish, oysters, clams, lobsters, etc.,) to keep the Laboratory open throughout the entire year, to increase the permanent staff engaged at Sea Isle City, and to secure and maintain a library of the necessary books of reference.

The purpose of the University Marine Biological Association, like the Association founded a few years since in England ("The Marine Biological Association of the United Kingdom"), is to aid at the same time both science and industry. It is national in character and constitution, and its affairs are watched over by the Trustees of the University of Pennsylvania without any charge upon its funds, so that the whole of the subscriptions and donations received are devoted absolutely to the support of the Laboratory and the prosecution of its work.

THE ALVARENGA PRIZE FOR 1891.

THE Alvarenga Prize for 1891, of the College of Physicians of Philadelphia, has been awarded to Dr. L. Duncan Bulkley, of New York, for his essay on Syphilis Insontium.

ELECTION AT THE PHILADELPHIA POLYCLINIC.

THE Board of Trustees of the Philadelphia Polyclinic and College for Graduates in Medicine have created a third Chair of Diseases of the Eye, and, upon the unanimous nomination of the Faculty, have elected George E. de Schweinitz, M.D., to fill the position.

THE OCTOBER MEETING OF THE MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

THE October meeting at St. Louis promises to be one of the most interesting and valuable in the history of this Association.

The Local Committee on Arrangements at St. Louis includes the representative men from all the colleges, of the local societies, of the medical journals and all the varied interests of the profession.

St. Louis is noted for her warm hospitality, and the profession this year are determined that everybody who comes to the meeting, October 14, 15 and 16, at the Pickwick Theatre, St. Louis, shall not have come in vain.

For information regarding the meeting, address the office of the Committee of Arrangements, Grand and Lindell Avenues, St. Louis.

One great advantage that the Mississippi Valley Medical Association possesses over other similar bodies is that its organic law is such that nothing can be discussed during its sessions except science. Any paper upon medical legislation or theorizing upon medical education, and the interests of colleges or

cliques will be ruled out. All ethical matters are referred, together with all extraordinary business, to appropriate committees, and their decisions are final and accepted without discussion. This Association stands as an example which might well be followed by other similar bodies. At the meeting in St. Louis there will be an unusually full programme, with discussions from representatives, not only of the Mississippi Valley, but the country at large. Dr. E. S. McKee, of Cincinnati, the Secretary of the Association, and the President, Dr. Charles H. Hughes, together with the Local Committee of Arrangements in St. Louis, are working hard so as to secure a large attendance and a profitable time.

FIRST ANNUAL MEETING OF THE AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.

THE American Electro-Therapeutic Association will hold its first annual meeting at the Hall of the College of Physicians, corner Locust and Thirteenth Streets, Philadelphia, Pa., Thursday, Friday and Saturday, September 24, 25 and 26, 1891, under the presidency of Dr. G. Betton Massey. Physicians interested in the discussion of electricity in medicine are invited to attend without further notice.

THIRD ANNUAL MEETING OF TRI-STATE MEDICAL ASSOCIATION.

THE third annual meeting of the Tri-State Medical Association will convene in Chattanooga, Tenn., Tuesday, October 27, 1891, and continue in session three days. Indications are that it will be one of the largest medical meetings ever held in the South. Representative physicians from all sections will be present. All who desire to read papers should send title to the Secretary of the Association, F. T. Smith, M.D., Chattanooga, before September 1.

MEDICAL BUREAU OF THE WORLD'S COLUMBIAN EXPOSITION.

THIS Bureau was organized June 1, 1891. The staff consists of John E. Owens, M.D., Medical Director; W. H. Allport, N. R. Yeager, S. C. Plummer, Assistant Surgeons. The Bureau took charge of the medical, surgical and sanitary inspection work on the grounds July 1, 1891, and is now in active operation. The present Bureau operating during the construction period will be the nucleus of the medical service of the World's Fair. It is the intention of the Medical Director to make the records of the Bureau as complete as possible from a statistical and historical standpoint, and to furnish at the close of the service a report which will be valuable in the organization of the medical bureaus of future expositions.

SUBSCRIBERS TO THE VIRCHOW TESTIMONIAL FUND.

THE following list comprises the Philadelphia physicians who have subscribed to the Virchow Testimonial Fund. The money has been forwarded to Professor Waldeyer, Berlin: Drs. Harrison Allen, J. M. Da Costa, Henry C. Chapman, J. Solis Cohen, Emil Fischer, W. W. Keen, P. D. Keyser, Morris Longstreth, S. Weir Mitchell, John H. Musser, J. Ewing Mears, Edward Martin, E. E. Montgomery, William Pepper, J. B. Roberts, George E. de Schweinitz, James Tyson, William Thomson, H. C. Wood, C. S. Wurts.

METHOD OF OBTAINING MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

THIS is obtainable, at any time, by a member of any state or local medical society which is entitled to send delegates to the association. All that is necessary is for the applicant to write to the treasurer of the association, Dr. Richard J. Dunglison, lock box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own society, signed by the president and secretary of said society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the association is not necessary in order to obtain membership. On receipt of the above amount the weekly journal of the association will be forwarded regularly.

CORRESPONDENCE.

THE NECESSITY OF THE REGULATION OF EXPERT TESTIMONY IN ACCIDENT CASES.

Editors of the UNIVERSITY MEDICAL MAGAZINE:

GENTLEMEN: The question of damages for injuries to persons is becoming a very serious one to corporations and individuals who employ labor—so much so that companies have been formed which insure employers against claims for damages by their injured employés. This question is particularly important to railroad companies, where the character of the labor and the multitude employed render the number of such cases much greater than in any other kind of employment.

While railroad companies take every means to make employment as safe as possible, and adopt every known device which will accomplish this, the number of accidents are great, and large sums are paid yearly for damages to persons. Frequently the whole matter hinges upon the medical opinion of the case, and, therefore, it is apparent how important a matter it is that, in such

cases, the *true* physical condition should be known and stated, and the *correct* medical and surgical facts presented to the jury.

In cases at law involving medical opinions, is frequently seen medical testimony for the plaintiff and defendant directly contradictory, and the matter of expert testimony becomes important.

In each case demanding damages for personal injury there are present litigation symptoms, more or less—some real—some imaginary—more feigned. I have seen a case of alleged spinal injury, where the demand was made for $20,000 damages, and the patient claimed permanent contracture of the flexor muscles of one side, great nervous prostration and almost total blindness, and to whom a leading professsor gave a certificate of *incurable* organic spinal disease, and a prominent oculist gave a like paper, stating there was commencing atrophy of the optic nerve, who, in less than a week after being paid a large sum by the railroad company, danced all night at a country ball, and read fine print without the aid of glasses.

I recall another case who kept up the deception of spinal injury, as evidenced by contractures of the four extremities, and walked on all-fours for months, and of whom experts testified that there was a general disintegration of the cord-structure from concussion, who outran an animal in less than a month after his claim was paid.

I recall a case who claimed an injury to the hip-joint, and of whom Professor Agnew testified that, in his opinion, nothing whatever was wrong with the joint, which received an award and promptly recovered after its payment.

Another case where a man claimed injury to the spine, and to whom a prominent surgeon gave a certificate stating there was permanent injury to the cord, and upon which certificate $4,000 damages were awarded, who, in less than a month, did all the laborious work on a farm.

I remember the case of a man to whom a lady physician gave a certificate for renal disease as the result of an alleged injury in a railroad wreck. He was sent to my office for examination, and brought me a bottle of what was said to be his own urine for analysis, which contained *pus*, *blood* and *casts*. Not being satisfied that his appearance warranted the condition evidenced by the sample of urine, I gave him a vessel, and asked him to urinate in it then and there, when he evacuated perfectly normal urine.

It goes without saying that he did not receive any compensation. Either the female physician was a party to the fraud, or she had been imposed upon by the claimant.

The matter of expert testimony has brought great reproach upon the profession, and it seems to me that the time has come when, by legislative enactment, this should be so regulated that only the bare medical facts, as certified to by a commission of experts appointed by the court, should be presented to the jury.

I could cite a large number of cases where the claims were founded upon fraudulent or imaginary conditions, and in which the defendant compromised for small sums, rather than risk an action at law, because the physicians in charge of the cases insisted upon the truthfulness or reality of the conditions

claimed, and which subsequent observation showed to be without foundation inasmuch as prompt recovery followed the receipt of punitive damages.

In order to remedy this growing evil an act was reported favorably from the Judiciary General Committee of the Pennsylvania House of Representatives during the session of 1891, and placed upon the calendar. It failed for want of time. A copy of this act is appended to this paper.

It will appear from this that, by the enactment of such a law, exact justice would accrue to each party. The commission, being unbiased, would report the *true* condition of the claimant, with the facts in the case as existing, and these only would be presented to the jury.

Again, the disgraceful occurrence of two or more prominent members of the profession giving directly opposing opinions in the same case would be avoided, and the consequent reproach to the profession would hereafter become something unknown.

I believe the profession owes it, as a duty to themselves, to push legislation necessary to such a procedure to a successful issue in all the States of the Union; and I am glad to learn, in this connection, that the State Medical Society of Pennsylvania have instructed the Committee on Legislation to look into this matter, with a view to formulating an appropriate law.

SAML. W. LATTA, M.D.,
Chief Medical Examiner, Pennsylvania Railroad.
201 N. Thirty-fifth Street, July 21, 1891.

An Act Relating to the Examination of Persons by Medical Experts Appointed by the Courts in connection with suits pending before them.

SECTION 1. Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in General Assembly met, and it is hereby enacted by the authority of the same: That in any suit where the question of the mental capacity or the physical condition of, or extent, character or effect of injuries sustained by any person or persons may be in controversy, the court in which such suit is pending shall, upon the application of either of the parties to such suit, appoint one or more medical experts, who shall, after being duly sworn or affirmed to discharge their duty with fidelity, and, after notice to the parties, make full examination of such person or persons, and make report thereon in writing to the court, which report shall be filed with the record of the suit, and may, so far as relevant, be read as evidence at the trial, subject to the right of either party to call such medical expert or experts for examination in chief or for cross-examination.

SEC. 2. That if any such person or persons shall refuse to submit to examination by such expert or experts, the court shall make such order, where the refusing person is a plaintiff, for the entering of a non-suit.

SEC. 3. That the fee of each of such experts shall be fixed by such court, but shall not be less than ten dollars nor more than one hundred dollars, and shall be taxed as part of the costs of the case.

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